Order No. MAC0210069C1
E25

Service Manual

Room Air Conditioner

CS-C9CKPG CU-C9CKP6G
CS-C12CKPG CU-C12CKP6G

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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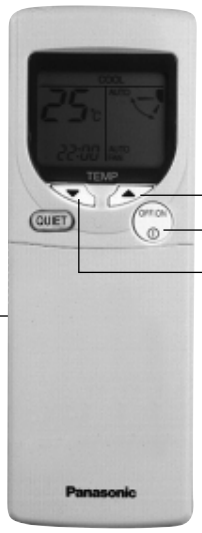
1 Features

- **High Efficiency**
- **Compact Design**
- **Comfort Environment**
  - Air filter with function to reduce dust and smoke
  - Wider range of horizontal discharge air
- **Auto Restart**
  - Random auto restart after power failure for safety restart operation
- **Removable and Washable Front Panel**
- **Remote Control Self-illuminating Button**
- **Air Purifying Filter**
  - Trap dust, tobacco smoke and tiny particles
  - Prevent the growth of bacteria and viruses trapped
- **Solar Refreshing Deodorizing Filter**
  - Remove unpleasant odour from the air
- **Quality Improvement**
  - Gas leakage protection
  - Prevent compressor reverse cycle
  - OLP to protect compressor
  - Noise prevention during soft dry operation
  - Blue Coated Condenser
    - High resistance to corrosion.
- **Operation Improvement**
  - Quiet mode to provide extra quiet operation
  - Powerful mode to reach the desired room temperature quickly
  - Economy mode to reduce electrical power consumption
- **Long Installation Piping**
  - CS/CU-C9CK, long piping up to 10 meter
  - CS/CU-C12CK, long piping up to 15 meter
- **24-hour Timer Setting**

2 Functions

Remote Control



Self illuminating button

OFF / ON ⏻
Operation OFF / ON

MODE
Operation Mode Selection

- AUTO Automatic Operation Mode
- COOL Cooling Operation Mode
- DRY Soft Dry Operation Mode
- FAN Air Circulation Mode

FAN SPEED
Indoor Fan Speed Selection

- FAN ■ Low Fan Speed
- FAN ■■■ Medium Fan Speed
- FAN ■■■■■ High Fan Speed
- AUTO FAN Automatic Fan Speed

AIR SWING
Vertical Airflow Direction Control

- AUTO Automatic Vertical Airflow Direction Control
- MANUAL Vertical Airflow Direction Manual Control (5 stages of adjustment)

POWERFUL
Powerful Mode Operation OFF/ON

QUIET
Quiet Mode Operation OFF/ON

TEMP.
Room Temperature Setting

Cooling, Soft Dry, Air Circulation Operation.
- Temperature Setting (16°C to 30°C)

Automatic Operation
- Hi Operation with 2°C higher than standard temperature.
- Operation with standard temperature.
- Lo Operation with 2°C lower than standard temperature.

ON-TIMER
OFF-TIMER
Timer Operation Selection

- 24-hour, OFF / ON Real Timer Setting.

TIME
Time / Timer Setting

- Hours and minutes setting.

SET
CANCEL
Timer Operation Set / Cancel

- ON Timer and OFF Timer setting and cancellation.

CLOCK
Clock Setting

- Current time setting.

ECONOMY
Economy Operation OFF / ON

Indoor Unit

AUTO
OFF / ON

Automatic Operation Button

- Press for < 5s to operate Automatic operation mode.
  (Used when the remote control cannot be used.)
- Press continuously for 5s or < 10s to operate Test Run/Pump down. “Beep” sound will be heard at the 5th second.
  (Used when test running or servicing.)
- Press continuously for 10s and above to omit or resume the remote control signal receiving sound. “Beep, beep” sound will be heard at the 10th second.

Operation Indication Lamps (LED)

- POWER (Green) ..... Lights up in operation, blinks in Automatic Operation Mode judging.
- QUIET (Orange) ..... Lights up in Quiet Mode Operation.
- TIMER (Orange) ..... Lights up in Timer Setting.
- POWERFUL (Orange) ... Lights up in Powerful Mode Operation.
- ECONOMY (Green) ..... Lights up in Economy Mode Operation.

Operation Mode

- Cooling, Soft Dry, Air Circulation and Automatic Mode.

Powerful Operation

- Reaches the desired room temperature quickly.

Quiet Operation

- To provide extra quiet operation.

Random Auto Restart Control

- Operation is restarted randomly after power failure at previous setting mode.

Anti-Freezing Control

- Anti-Freezing control for indoor heat exchanger. (Cooling and Soft Dry)

Economy Operation

- To reduce electrical power consumption.

Indoor Fan Speed Control

- High, Medium and Low.
- Automatic Fan Speed Mode
  - Cooling : Fan rotates at Hi, Me and SLo speed. Deodorizing control is available.
  - Soft Dry : Fan rotates at Lo- speed. Deodorizing control is available.

Airflow Direction Control

- Automatic air swing and manual adjusted by remote control for vertical airflow.
- Manually adjusted by hand for horizontal airflow.

Starting Current Control

- Fan motor is delayed for 1.6 seconds when compressor starts simultaneously.

Time Delay Safety Control

- Restarting is inhibited for appro. 3 minutes.

7 Minutes Time Save Control

- Cooling Operation only.

Outdoor Unit

Compressor Reverse Rotation Protection Control

- To protect compressor from reverse rotation when there is a instantaneous power failure.

Overload Protector

- OLP to protect the compressor. Overload Protector will trip when
  – High temperature or high current flows to compressor.

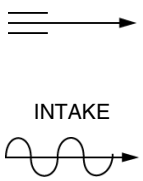
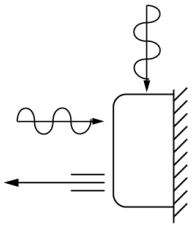
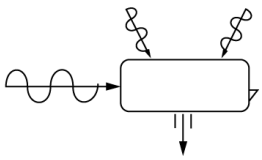
60 Secs. Forced Operation Control

- Once the compressor is activated, it does not stop within the first 60 secs. However, it stops immediately with remote control stop signal.

Outdoor Fan Operation Control

- Temperature Fuse.

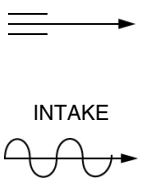
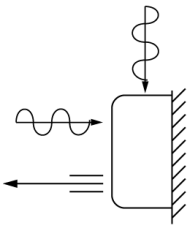
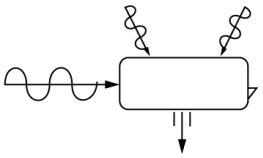
3 Product Specifications

			Unit	CS-C9CK	CU-C9CK
Power Source			Phase, Voltage, Cycle	Single, 115, 60 Hz	
Cooling Capacity			kW (BTU/h)	(1) 2.58 (8,800)	
				(2) 2.60 (8,800)	
Moisture Removal			l/h (Pint/h)	0.8 (1.7)	
Airflow Method				OUTLET / INTAKE 	SIDE VIEW 	TOP VIEW 
Air Volume	Indoor Air (Lo)		m^3/min (cfm)	6.1 (220)	—
	Indoor Air (Me)		m^3/min (cfm)	7.2 (250)	—
	Indoor Air (Hi)		m^3/min (cfm)	8.9 (310)	33.8 (1,190)
	Indoor Air (SHi)		m^3/min (cfm)	9.8 (340)	—
Noise Level			dB (A)	High 36, Low 26	High 49
			Power level dB	—	—
Electrical Data	Input Power		W	(1) 790	
				(2) 800	
	Running Current		A	(1) 7.2	
				(2) 7.3	
	EER		W/W (BTU/hW)	(1) 3.265 (11.10)	
				(2) 3.25 (11.00)	
	Starting Current		A	42.0	
Piping Connection Port (Flare piping)			inch inch	G ; Half Union 3/8” L ; Half Union 1/4”	G ; 3-way valve 3/8” L ; 2-way valve 1/4”
Pipe Size (Flare piping)			inch inch	G ; (gas side) 3/8” L ; (liquid side) 1/4”	G ; (gas side) 3/8” L ; (liquid side) 1/4”
Drain Hose	Inner diameter		mm	12	—
	Length		mm	650	—
Power Cord	Length		m	—	—
	Number of core-wire			—	—
Dimensions	Height		inch (mm)	10 - 13/16 (275)	21 - 1/4 (540)
	Width		inch (mm)	31 - 15/32 (799)	30 - 23/32 (780)
	Depth		inch (mm)	8 - 9/32 (210)	11 - 3/8 (289)
Net Weight			lb (kg)	20 (9.0)	64 (29.0)
Compressor		Type		—	Rotary (1 cylinder) rolling piston type
	Motor	Type		—	Induction (2-poles)
	Rated	Output	W	—	600
Air Circulation		Type		Cross-flow Fan	Propeller Fan
		Material		AS + Glass Fiber 20%	PP Resin
	Motor	Type		Induction (4-poles)	Induction (6-poles)
		Input	W	55.1	78.0
	Rated	Output	W	15	30
	Fan Speed	Low	rpm	780	—
		Medium	rpm	920	—
		High	rpm	1,140	845
		SuperHigh	rpm	1,250	—
Heat Exchanger	Description			Evaporator	Condenser
	Tube material			Copper	Copper
	Fin material			Aluminium (Pre Coat)	Aluminium (Blue Coat)
	Fin Type			Slit Fin	Louver Fin
	Row / Stage			(Plate fin configuration, forced draft)	
				2 × 15	1 × 20
	FPI			19	16
	Size (W × H × L)		mm	610 × 315 × 25.4	841 × 508 × 22
Refrigerant Control Device				—	Capillary Tube

		Unit	CS-C9CK	CU-C9CK
Refrigeration Oil		(cm^3)	—	SUNISO 4GDID or ATMOS M60 (290)
Refrigerant (R-22)		g (oz)	—	790 (27.9)
Thermostat			Electronic Control	—
Protection Device			—	Overload Protector
Capillary Tube	Length	mm	—	870
	Flow Rate	l/min	—	12.0
	Inner Diameter	mm	—	1.6
Air Filter	Material Style		P.P. Honeycomb	—
Capacity Control			Capillary Tube	
Compressor Capacitor		µF, VAC	—	35 µF, 370VAC
Fan Motor Capacitor		µF, VAC	5.0 µF, 230VAC	8.0 µF, 230VAC

Note:

- Specifications are subject to change without notice for further improvement.
- (1) — CS-C9CKPG-4 / CU-C9CKP6G-4 (USA).
- (2) — CS-C9CKPG-5 / CU-C9CKP6G-5 (Canada).

				Unit	CS-C12CK	CU-C12CK
Power Source				Phase, Voltage, Cycle	Single, 115, 60 Hz	
Cooling Capacity				kW (BTU/h)	3.60 (12,300)	
Moisture Removal				l/h (Pint/h)	1.4 (3.0)	
Airflow Method					OUTLET / INTAKE 	SIDE VIEW 
						TOP VIEW 
Air Volume	Indoor Air (Lo)			m^3/min (cfm)	6.9 (240)	—
	Indoor Air (Me)			m^3/min (cfm)	8.3 (290)	—
	Indoor Air (Hi)			m^3/min (cfm)	9.7 (340)	31.1 (1,100)
	Indoor Air (SHi)			m^3/min (cfm)	10.0 (350)	—
Noise Level				dB (A)	High 39, Low 29	High 49
				Power level dB	—	—
Electrical Data	Input Power			kW	(1) 1.16	
					(2) 1.15	
	Running Current			A	(1) 10.3	
					(2) 10.2	
	EER			W/W (BTU/hW)	(1) 3.100 (10.60)	
					(2) 3.10 (10.65)	
	Starting Current			A	57.0	
Piping Connection Port (Flare piping)				inch inch	G ; Half Union 1/2” L ; Half Union 1/4”	G ; 3-way valve 1/2” L ; 2-way valve 1/4”
Pipe Size (Flare piping)				inch inch	G ; (gas side) 1/2” L ; (liquid side) 1/4”	G ; (gas side) 1/2” L ; (liquid side) 1/4”
Drain Hose	Inner diameter			mm	12	—
	Length			mm	650	—
Power Cord	Length			m	—	—
	Number of core-wire				—	—
Dimensions	Height			inch (mm)	10 - 13/16 (275)	21 - 1/4 (540)
	Width			inch (mm)	31 - 15/32 (799)	30 - 23/32 (780)
	Depth			inch (mm)	8 - 9/32 (210)	11 - 3/8 (289)
Net Weight				lb (kg)	20 (9.0)	73 (33.0)
Compressor		Type			—	Rotary (1 cylinder) rolling piston type
	Motor	Type			—	Induction (2-poles)
	Rated	Output		kW	—	0.85
Air Circulation		Type			Cross-flow Fan	Propeller Fan
		Material			AS + Glass Fiber 20%	PP Resin
	Motor	Type			Induction (4-poles)	Induction (6-poles)
		Input		W	55.1	78.0
	Rated	Output		W	15	30
	Fan Speed		Low	rpm	900	—
			Medium	rpm	1,080	—
			High	rpm	1,260	850
			SuperHigh	rpm	1,300	—
Heat Exchanger	Description				Evaporator	Condenser
	Tube material				Copper	Copper
	Fin material				Aluminium (Pre Coat)	Aluminium (Blue Coat)
	Fin Type				Slit Fin	Louver Fin
	Row / Stage				(Plate fin configuration, forced draft)	
					2 × 15	2 × 24
	FPI				21	16
	Size (W × H × L)			mm	610 × 315 × 25.4	744.2 × 504 × 25.4 723.5
Refrigerant Control Device					—	Capillary Tube
Refrigeration Oil				(cm^3)	—	SUNISO 4GDID or ATMOS M60 (350)

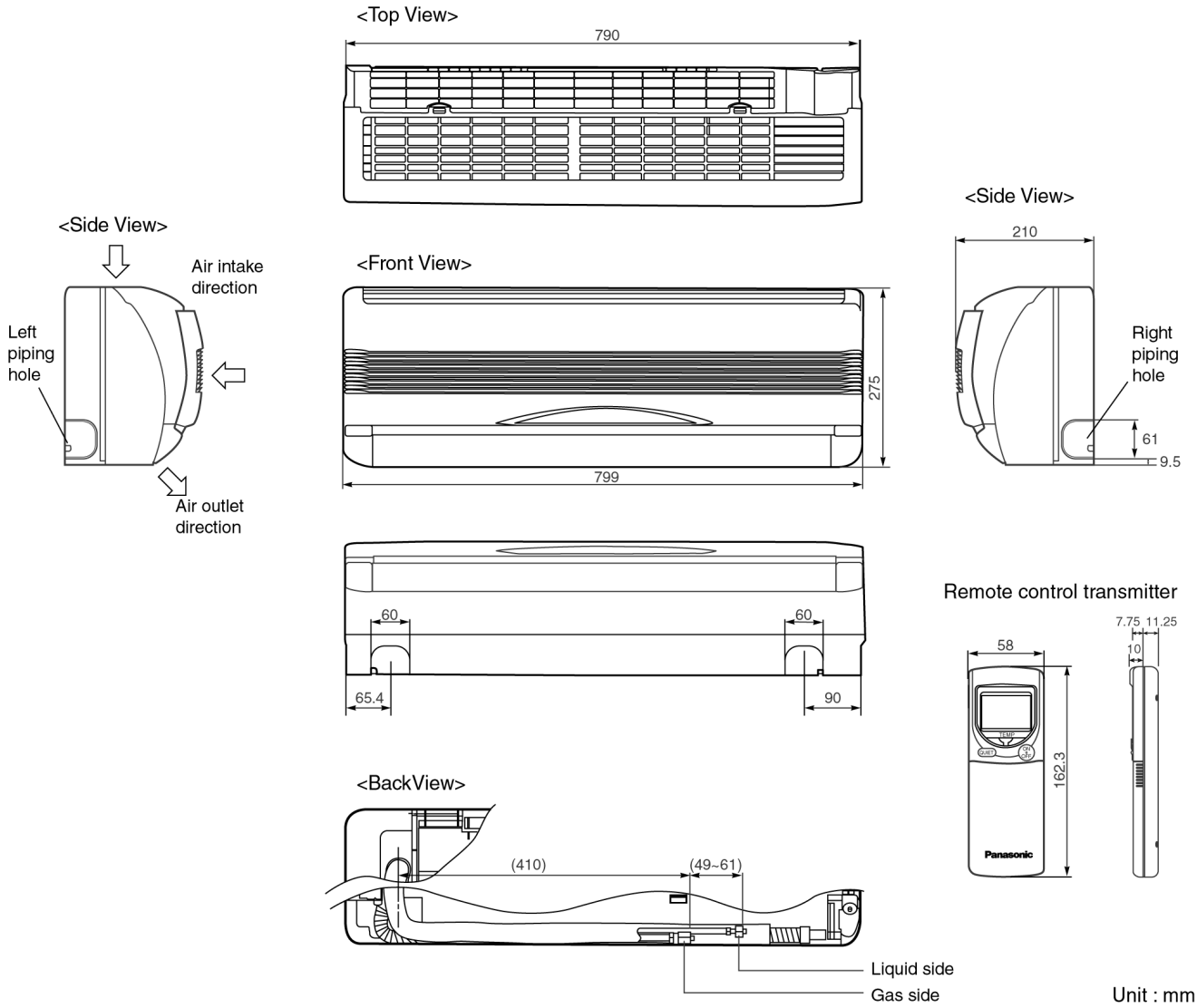
		Unit	CS-C12CK	CU-C12CK
Refrigerant (R-22)		g (oz)	—	970 (34.2)
Thermostat			Electronic Control	—
Protection Device			—	Overload Protector
Capillary Tube	Length	mm	—	583
	Flow Rate	l/min	—	16
	Inner Diameter	mm	—	1.7
Air Filter	Material Style		P.P. Honeycomb	—
Capacity Control			Capillary Tube	
Compressor Capacitor		μF, VAC	—	50 μF, 370VAC
Fan Motor Capacitor		μF, VAC	5.0 μF, 230VAC	8.0 μF, 230VAC

Note:

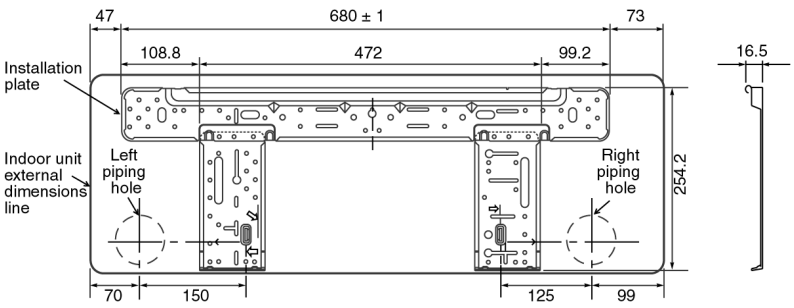
- Specifications are subject to change without notice for further improvement.
- (1) — CS-C12CKPG-4 / CU-C12CKP6G-4 (USA).
- (2) — CS-C12CKPG-5 / CU-C12CKP6G-5 (Canada).

4 Dimensions

CS-C9CK / CS-C12CK

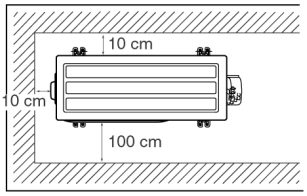


Relative position between the indoor unit and the installation plate <Front View>



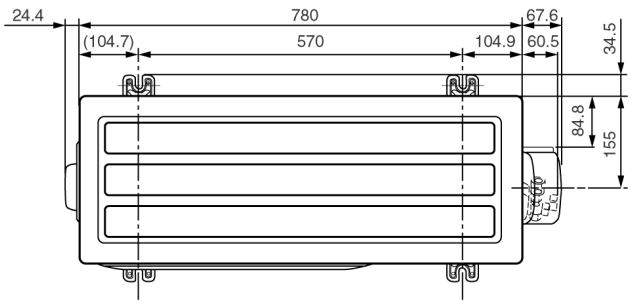
CU-C9CK / CU-C12CK

Space necessary for installation



Anchor Bolt Pitch
320 x 570

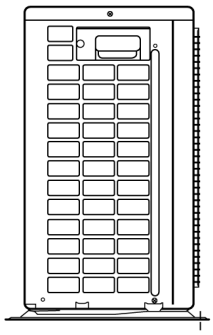
<Top View>



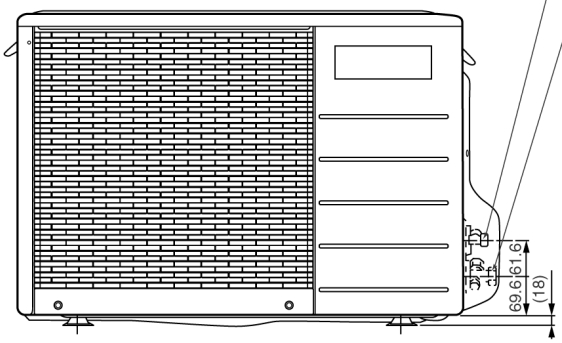
2-way valve at Liquid side
(High Pressure)

3-way valve at Gas side
(Low Pressure)

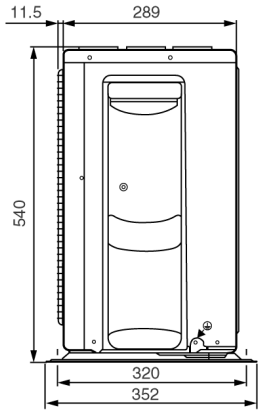
<Side View>



<Front View>

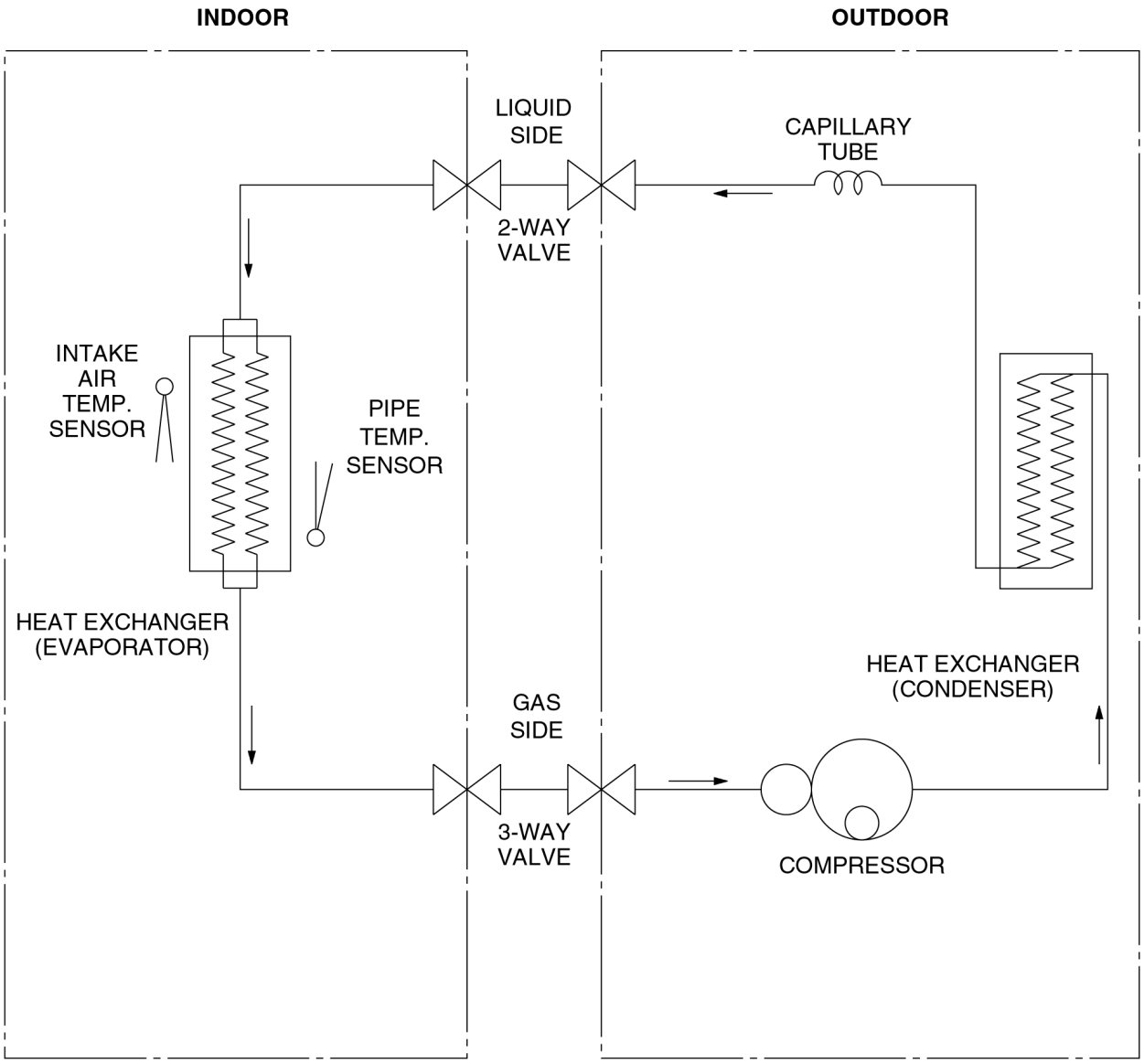


<Side View>



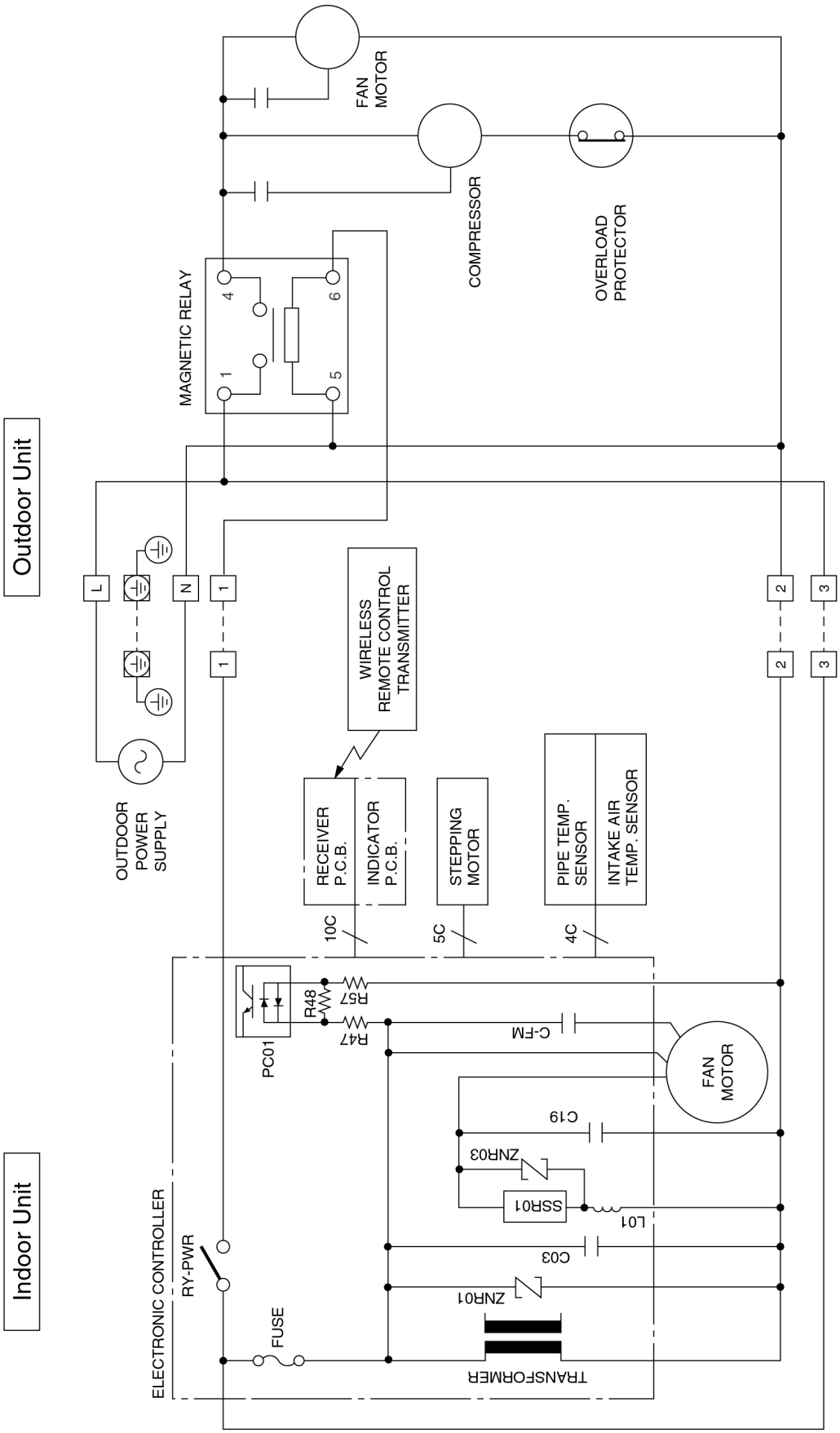
5 Refrigeration Cycle Diagram

CS-C9CK / CU-C9CK
CS-C12CK / CU-C12CK



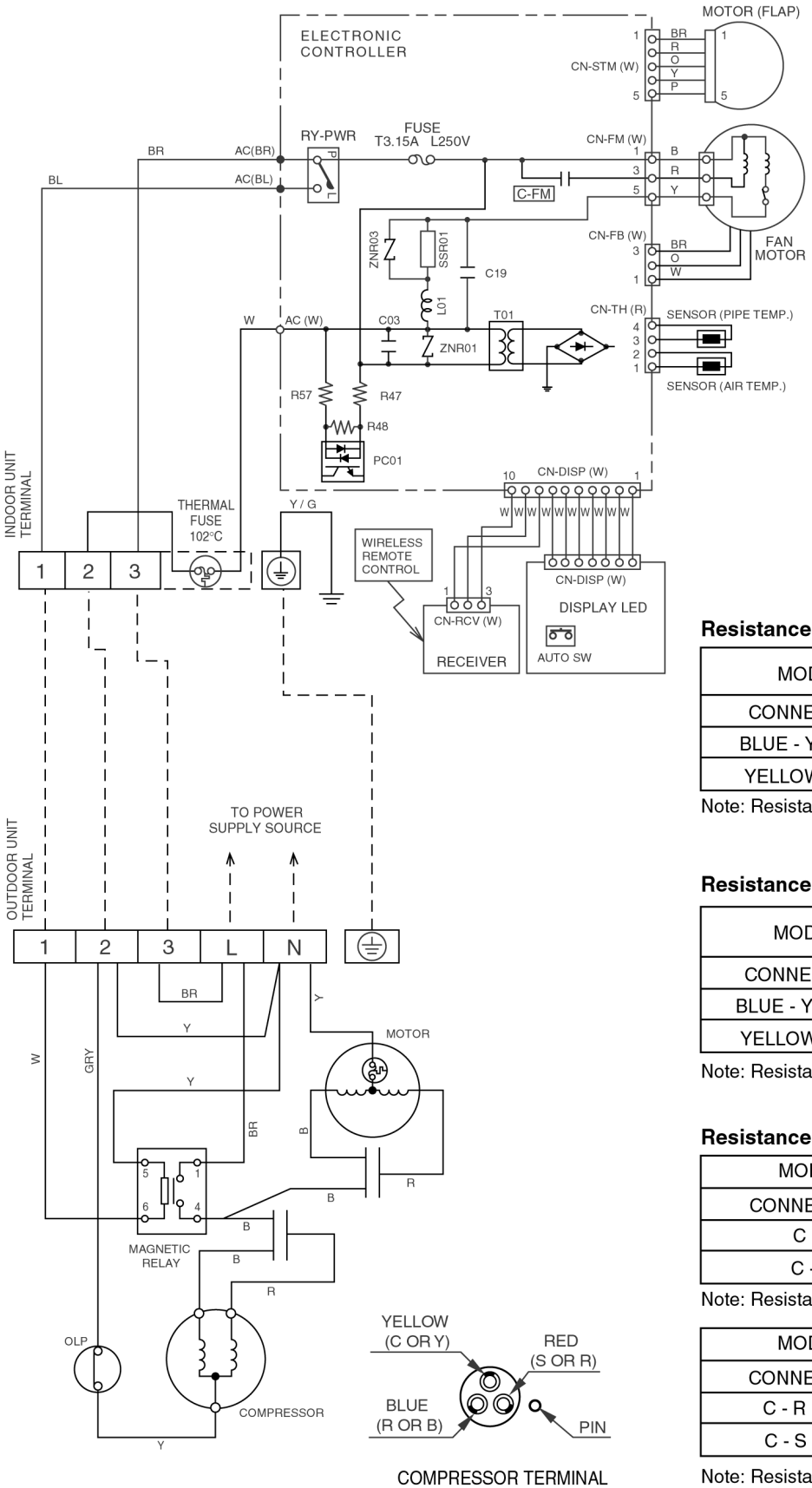
6 Block Diagram

CS-C9CK / CU-C9CK
CS-C12CK / CU-C12CK



7 Wiring Diagram

CS-C9CK / CU-C9CK
CS-C12CK / CU-C12CK



COMPRESSOR TERMINAL

REMARKS:

B	: BLUE
BR	: BROWN
BL	: BLACK
GRY	: GRAY
O	: ORANGE
P	: PINK
R	: RED
W	: WHITE
Y/G	: YELLOW / GREEN

Resistance of Indoor Fan Motor Windings

MODEL	CS-C9CK CS-C12CK
CONNECTION	CWA921143
BLUE - YELLOW	82.4 Ω
YELLOW - RED	103.4 Ω

Note: Resistance at 20°C of ambient temperature.

Resistance of Outdoor Fan Motor Windings

MODEL	CU-C9CK CU-C12CK
CONNECTION	CWA951235
BLUE - YELLOW	63.2 Ω
YELLOW - RED	59.0 Ω

Note: Resistance at 20°C of ambient temperature.

Resistance of Compressror Windings

MODEL	CU-C9CK
CONNECTION	2R13S126A6J
C - R	0.938 Ω
C - S	2.611 Ω

Note: Resistance at 20°C of ambient temperature.

MODEL	CU-C12CK
CONNECTION	2P19S126C1A
C - R (Main)	0.613 Ω
C - S (Sub)	2.106 Ω

Note: Resistance at 25°C/20°C of ambient temperature.

8 Operation Details

8.1. Cooling Mode Operation

Cooling in operation according to Remote Control setting.

Time Delay Safety Control (3 minutes)

- When the compressor is stopped by Remote Control, it restarts after 3 minutes when the Remote Control is turned ON.
- When the setting temperature is reached during cooling operation, the compressor stops and it will not start for 3 minutes.

7 minutes Time Save Control

- The compressor will start automatically if it has stopped for 7 minutes even if the room temperature is between the compressor ON temperature and OFF temperature.

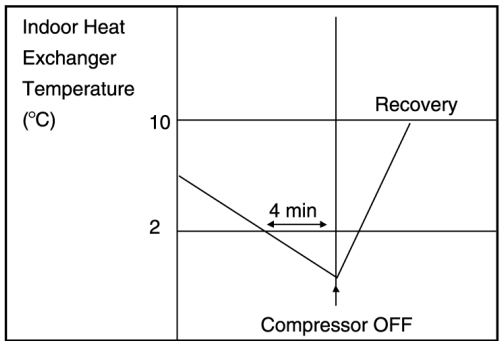
Starting Current Control

- When the compressor outdoor fan motor and indoor fan motor are simultaneously started, the indoor fan motor will operate 1.6 second later.

Anti-Freezing Control

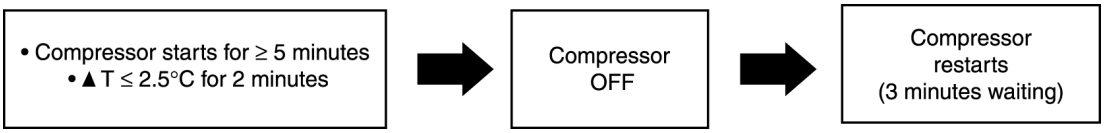
- If the temperature of the indoor heat exchanger falls continuously below 2°C for 4 minutes or more, the compressor turns off to protect the indoor heat exchanger from freezing. The fan speed setting remains the same.
- Compressor will restart again when the indoor heat exchanger temperature rises to 10°C (Recovery).

※ 3 minutes waiting of Time Delay Safety Control is valid for Cooling Operation.



Compressor Reverse Rotation Protection Control

- If the compressor is operating continuously for 5 minutes or longer and the temperature difference between intake air and indoor heat exchanger is 2.5°C or less for 2 minutes, compressor will stop and restart automatically.
  (Time Delay Safety Control is valid)

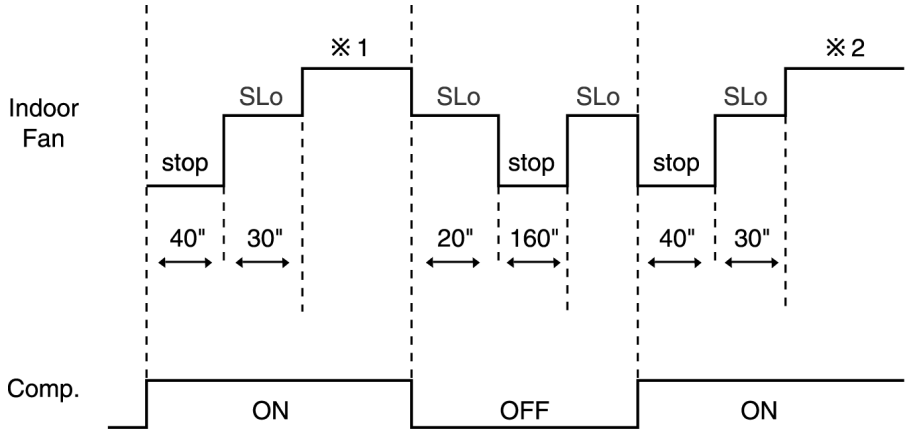


▲ T = Intake air temperature - Indoor heat exchanger temperature
This is to protect reverse rotation of the compressor when there is a instantaneous power failure.

Automatic Fan Speed Mode

When Automatic Fan Speed is selected at Remote Control during cooling operation.

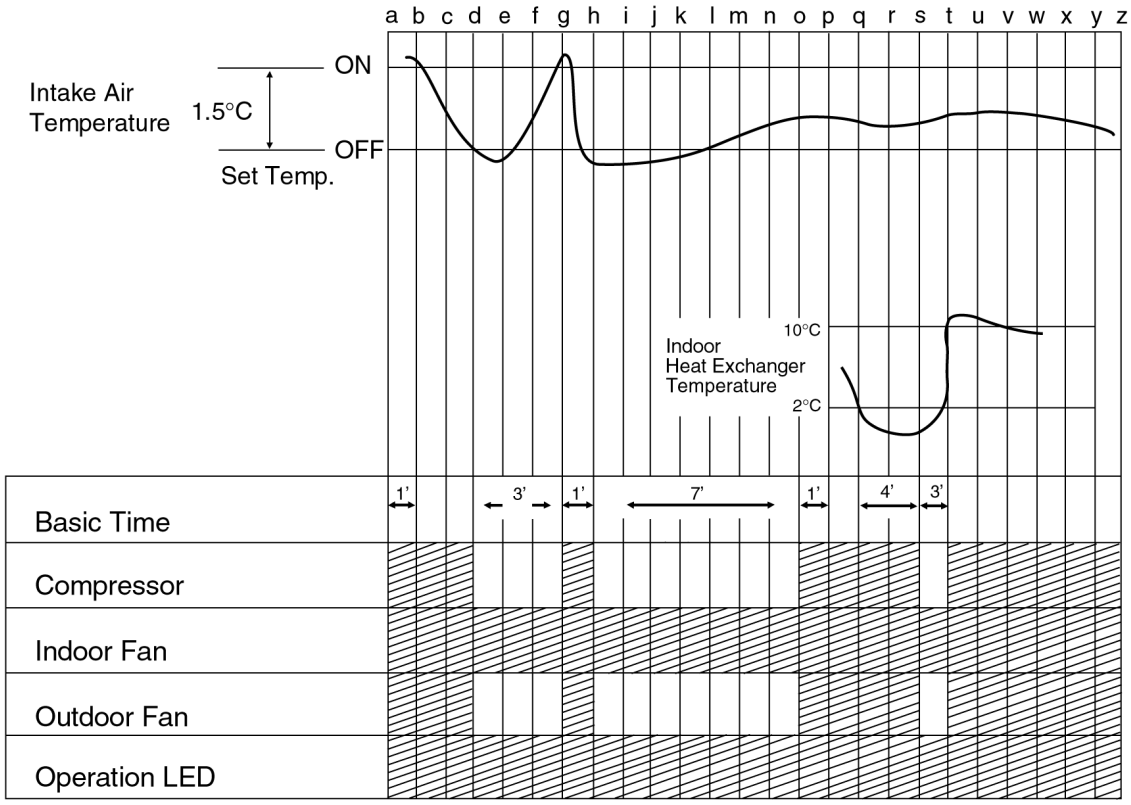
- Fan speed rotates in the range of Hi to Me.
- Deodorizing Control.



※ 1 Fan Speed is Hi until the compressor stops (when the room temperature reaches setting temperature).

※ 2 Fan Speed is Me after the compressor restarts.

Cooling Operation Time Diagram



<Description of operation>

d – g : Time Delay Safety Control (waiting for 3 minutes)
g – h : 60 sec. Forced Operation
h – o : 7 min. Time Save Control
q – u : Anti Freezing Control

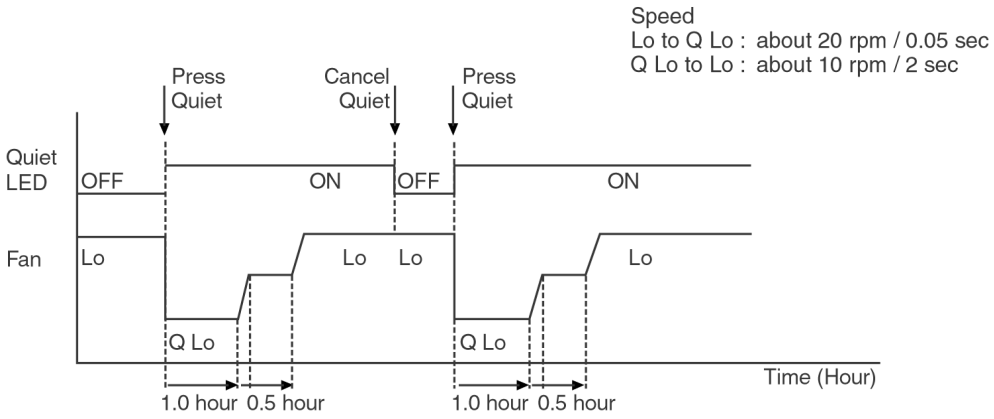
Operation

Stop

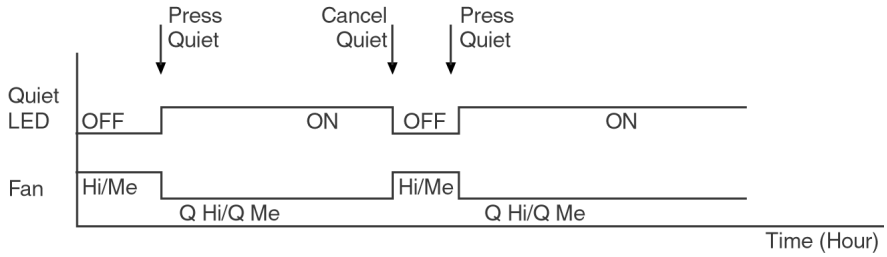
Quiet Operation Control

(For Cooling Mode or cooling region of Soft Dry Mode)

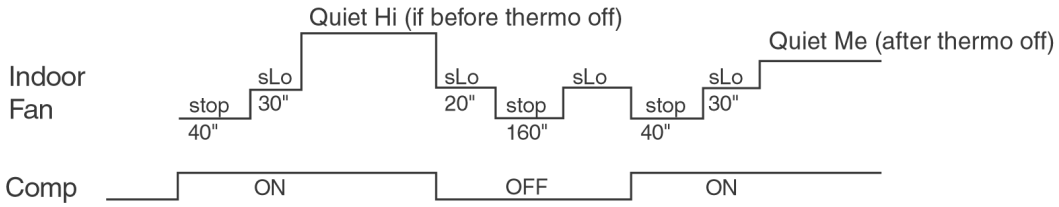
- Purpose of this operation is to provide quite cooling operation compare to normal operation.
- When the Quiet Mode is set at the remote control, Quiet Mode LED illuminates, the sound level will be automatically decreased 2 dB (Lo), decreased 3 dB (Hi, Me), against the present sound level operation.
- Quiet setting of fan speed rpm refer to Indoor Fan Speed Control.
- Dew formation become severe at Quiet Lo cool, therefore Quiet Lo cool is operated only 1h 30 min (1h QLo, 30 min QLo + 50). After that, it goes back to Lo cool (However Quiet LED remains on).
- Manual Airflow Direction:-
  - RPM control during Lo cool



  - RPM control during Hi & Me cool



- Auto Airflow Direction:-



- Quiet Mode Operation will stop if:-
  - Quiet mode button is pressed again.
  - Stopped by ON/OFF switch.
  - Timer OFF activates.
  - Powerful mode button is pressed.
  - When change mode to Air Circulation mode.

8.2. Soft Dry Mode Operation

- The unit starts cooling operation until the room temperature reaches the setting temperature set on the Remote Control, and then Soft Dry operation will start.
- During Soft Dry operation, the Indoor Fan will operate at Lo- speed.
- The operation will be switched on and off for up to 10 minutes “ON” and 6 minutes “OFF”. Once Soft Dry operation is turned off, it stops for 6 minutes.

Time Delay Safety Control

- Once the compressor stops, it will not start for 3 minutes during Cooling operation.

Starting Current Control

- Same as Starting Current Control for Cooling Mode operation.

Anti-Freezing Control

- Same as Anti-Freezing Control for Cooling Mode operation. (For Soft Dry region, 6 minutes waiting is valid during compressor stops.)

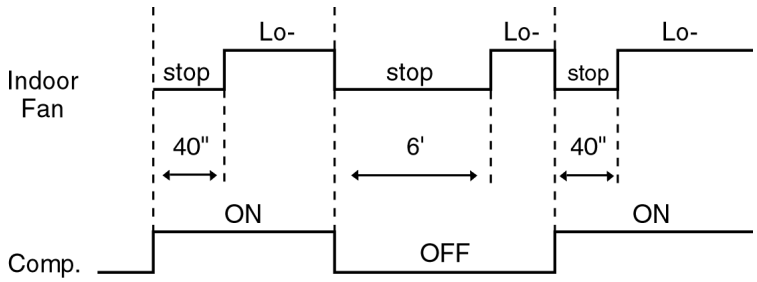
Compressor Reverse Rotation Protection Control

- Same as Compressor Reverse Rotation Protection Control for Cooling Mode Operation. (For Soft Dry region, 6 minutes waiting is valid during compressor stops.)

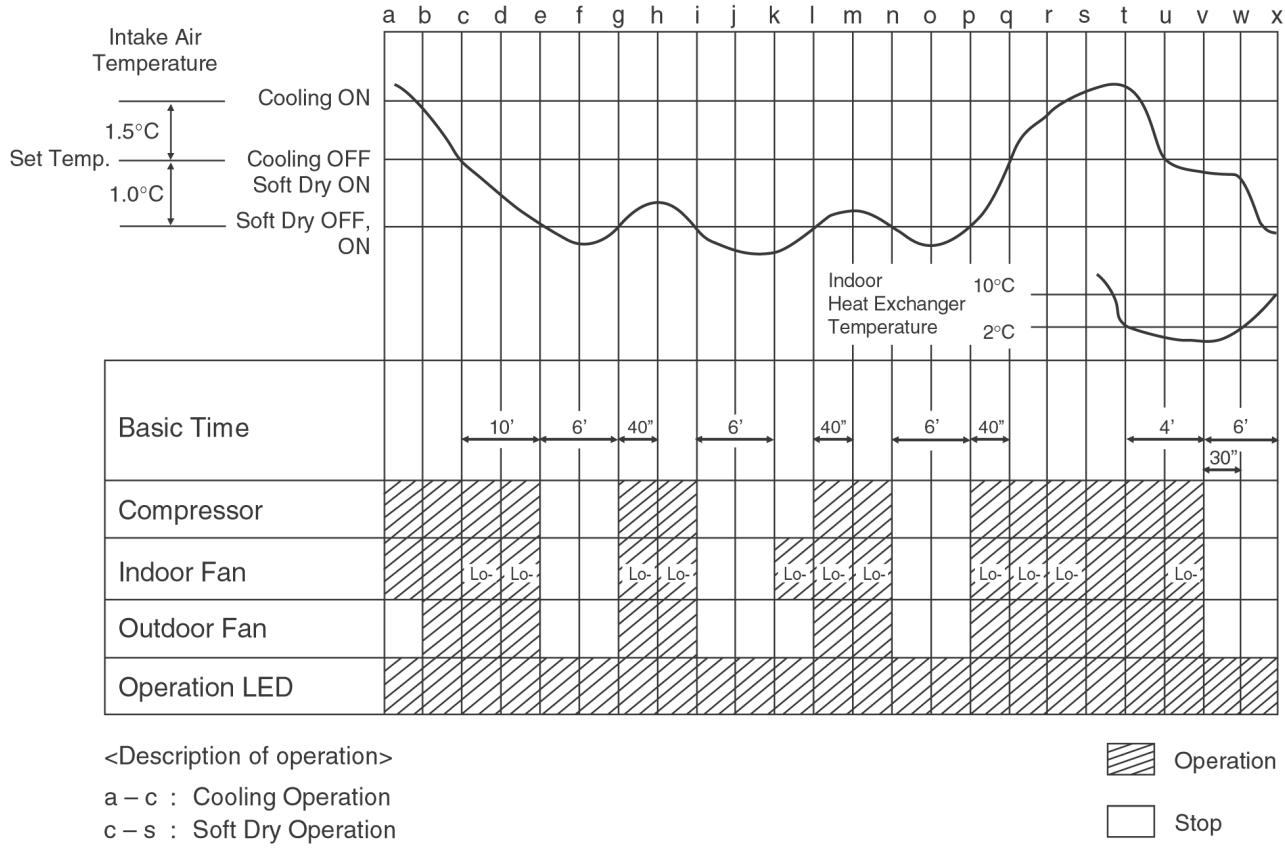
Automatic Fan Speed Mode

When Automatic Fan Speed is selected at Remote Control during Soft Dry operation.

- Fan speed off and on at Lo- speed.
- Deodorizing Control.



Soft Dry Operation Time Diagram

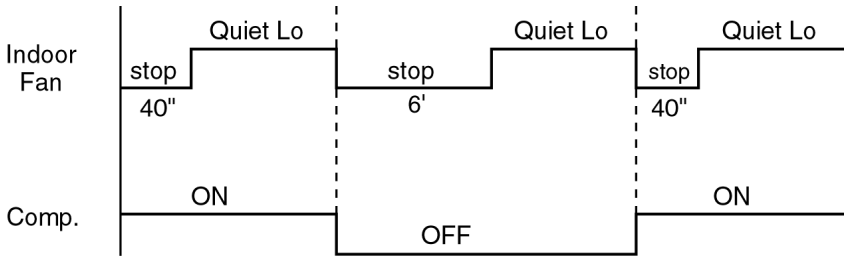


<Description of operation>

a – c : Cooling Operation
c – s : Soft Dry Operation
e – g : Soft Dry OFF
l – m : 60 sec. Forced Operation
t – x : Anti Freezing Control

Quiet Operation Control

(For Dry region of Soft Dry Mode)

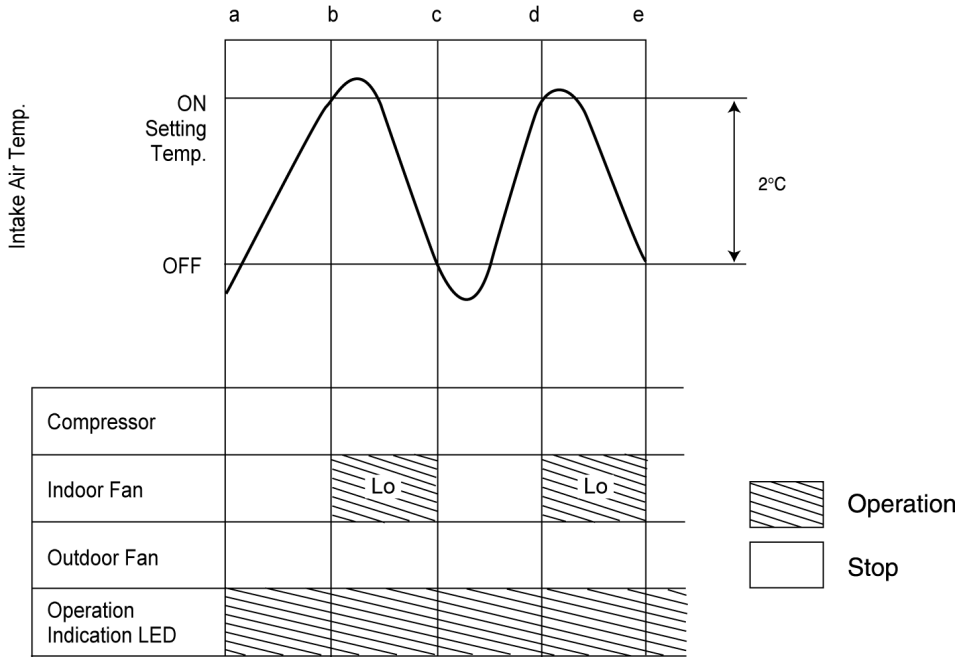


Note: Quiet Lo of Fan speed rpm refer to Indoor Fan Speed Control.

8.3. Air Circulation Mode Operation

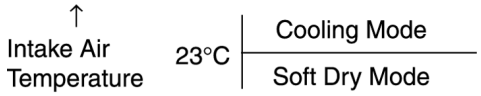
- When the temperature near the ceiling reaches the setting temperature, Air Circulation Mode operation commences at low airflow volume. It stops when the temperature drops to 2°C below the setting temperature.

Air Circulation Mode Operation Time Diagram



8.4. Automatic Mode Operation

Standard for Determining Operation Mode



	Setting Temperature (Standard)
Cooling Mode	25°C
Soft Dry Mode	22°C

- Indoor fan operates at SLo fan speed for 20 seconds.
- After judging indoor air temperature, the operation mode is determined and operation continued at the mode determined.
- After the operation mode has been determined, the mode does not change. However, Soft Dry mode operation includes Cooling mode operation.
- Room temperature adjustment.

  The following are added to the setting temperature specified as above.

			Cooling	Soft Dry
Higher	→	+2°C	27°C	24°C
Standard	→	±0°C	25°C	22°C
Lower	→	–2°C	23°C	20°C

- The mode judging temperature and standard setting temperature can be increased by 2°C, by open the circuit of JX1 at indoor electronic controller.

	Setting Temperature (Standard)
Cooling Mode	27°C
Soft Dry Mode	24°C

8.5. Powerful Mode Operation

- Purpose of this operation is to obtain the setting temperature quickly.
- When the Powerful Mode is set, the set temperature will be automatically decreased 3°C against the present setting temperature (Lower temperature: 16°C).
- This operation automatically will be running under SHi Fan Speed (Cooling), Lo- Fan Speed (Soft Dry).
- Vertical Airflow Direction:-
  - In “Manual” setting, the vane will automatically shift down 10° lower than previous setting.
  - In “Auto” setting, the vane will automatically swing up and down. However the lower limit will be shifted 10° downward.
- Powerful Mode will operate for 15 minutes only, after that it will shift back to previous operation mode.
- Powerful Mode will stop if:-
  - Powerful mode button is pressed again.
  - Stopped by ON / OFF switch.
  - Timer OFF activates.
  - Quiet mode button is pressed.
  - Operation mode button is changed.

8.6. Economy Mode Operation

- Purpose of this operation is to save or reduced electrical power consumption of the room air conditioner.
- When the Economy Mode is set, the set temperature will be automatically increased 0.5°C against the preset setting temperature (Higher temperature: 30°C).
- This operation automatically will be running under Lo- Fan Speed.
- Vertical Airflow Direction:-

  In “Manual” or “Auto” setting, the vane will automatically change to Auto Air Swing.
- Economy Mode will stop if:-
  - Economy Mode button is pressed again.
  - Stopped by ON / OFF switch.
  - Timer OFF activates.
  - Powerful mode button is pressed.
  - Auto or Manual air swing button is pressed.
  - Fan Speed control button is pressed.
  - Quiet Mode button is pressed ON.
  - Operation Mode is changed.

8.7. Random Auto Restart Control

- If there is a power failure during air conditioner operation, operation will be automatically restarted after 3 to 4 minutes when the power is resumed.

  It will start with previous operation mode and airflow direction.
- Restart time is decided randomly using 4 parameter:-

  Intake air temperature, setting temperature, fan speed and Air Swing Blade position.
- Auto Restart Control is not available when Timer is set.
- This control can be omitted by open the circuit of JX2. (Refer Circuit Diagram)

8.8. Indoor Fan Speed Control

- Auto Fan Speed Control

  When set to Auto Fan Speed, the fan speed is adjusted between maximum and minimum setting as shown in the table.

- Manual Fan Speed Control

  Basic fan speed adjustment (3 settings, from Lo to Hi) can be carried out by using the Fan Speed selection button at the remote control.

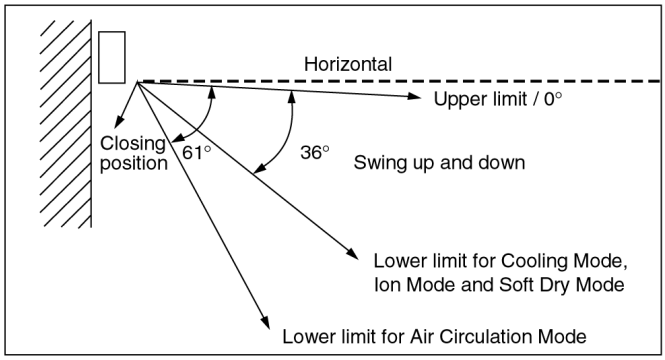
Tap				S Hi	Hi	Me	H Lo	C Lo	Lo-	S Lo	SSLo	Stop
Cooling	Normal	Manual	Hi		○							
			Me			○						
			Lo					○				
		Air Volume Auto			○	○				○		○
	Powerful	Manual		○								
		Air Volume Auto		○								
	Economy	Manual							○			
		Air Volume Auto							○			
Dry		Manual							○			○
		Air Volume Auto							○			○
Air circulation		Normal						○				○
Mode judgement										○		
Cooling	Quiet	Manual	Q Hi		Hi-100							
			Q Me			Me-100						
			Q Lo					CLo-100				
		Air Volume Auto			Hi-100	Me-100				○		○
Dry	Quiet	Manual						CLo-100				○
		Air Volume Auto						CLo-100				○

Fan Speed (Rpm)	CS-C12CKPG	CS-C9CKPG
S Hi	1300	1250
Hi	1260	1140
Me	1080	920
H Lo	960	840
C Lo	900	780
Lo-	870	750
S Lo	820	700
SS Lo	–	–
Q S Hi	–	–
Q Hi	1160	1040
Q Me	980	820
Q H Lo	–	–
Q Lo	800	680

8.9. Vertical Airflow Direction Control

Vertical Airflow Direction Auto-Control

- When set a Airflow Direction Auto-Control with remote control, the louver swings up and down as shown in the diagram.
- The louver does not swing when the Indoor Fan Motor stops during operation at the upper limit.
- When stopped with remote control, the discharge vent is reset, and stopped at the closing position.



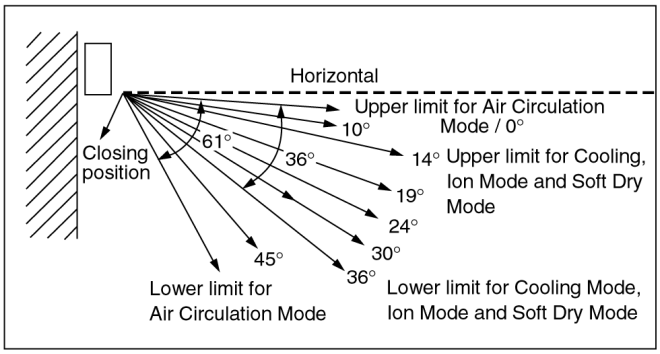
※ The left and right airflow direction louvers can be adjusted manually.

※ 1. There is no swinging while indoor fan motor is stopped during Cooling, Ion and Soft Dry operation.
※ 2. In Air Circulation operation, when the intake air temperature reaches set temperature, the airflow direction is changed from upper limit to lower limit. When the intake air temperature falls to 2°C lower than set temperature, the airflow direction is changed from lower limit to upper limit.

Vertical Airflow Direction manual Control

- When the manual Airflow Direction Selection Button is pressed, the automatic airflow is released and the airflow direction louver move up and down in the range shown in the diagram.

  The louver can be adjusted by pressing the button to the desired louver position.
- When the remote control is used to stop the operation, the discharge vent is reset, and stopped at the closing position.



※ The left and right airflow direction louvers can be adjusted manually.

8.10. Delay ON Timer Control

- When the Delayed ON Timer is set by using the remote control, the unit will start operate slightly before the set time, so that the room will reach nearly to the set temperature by the desired time.
- For Cooling and Soft Dry mode, the operation will start 15 minutes before the set time.
- For Automatic mode, the indoor fan will operate at SLo speed for 20 seconds, 15 minutes before the set time to detect the intake air temperature to determine the operation mode. The operation indication lamp will blink at this time.

8.11. Remote Control Signal Receiving Sound

- Long beep sound will be heard when:-
  - – Stopping the Air Conditioner using ON/OFF switch.
  - – Stopping the Quiet Mode.
  - – Stopping the Powerful Mode.
  - – Stopping the Economy Mode.
- Short beep sound will be heard for others.
- To switch off the beep sound:-

  Press the “Automatic Operation Button” continuously for 10 seconds or more (“beep” “beep” will be heard at the 10th second).

  Repeat the above if you want to switch ON the beep sound.

※ However, if the “Automatic Operation Button” has been pressed the Automatic operation will be activated.
If you do not require this operation, you may change it by using the remote control.

9 Operating Instructions

SAFETY PRECAUTIONS

Before operating, please read the following "Safety Precautions" carefully.

- To prevent personal injury, injury to others and property damage, the following instructions must be followed.
- Incorrect operation due to failure to follow instructions will cause harm or damage, the seriousness of which is classified as follow:

⚠ Warning
This sign warns of death or serious injury.

⚠ Caution
This sign warns of damage to property.

- The instructions to be followed are classified by the following symbols:

This symbol (with a white background) denotes an action that is PROHIBITED.

These symbols (with a black background) denote actions that are COMPULSORY.

■ Installation Precautions

⚠ Warning

- **Do not install, remove and reinstall the unit by yourself.**
  Improper installation will cause leakage, electric shock or fire. Please engage an authorized dealer or specialist for the installation work.

⚠ Caution

- **This room air conditioner must be earthed.**
  Improper grounding could cause electric shock.
- **Ensure that the drainage piping is connected properly.**
  Otherwise, water will leak out.
- **Do not install the unit in a potentially explosive atmosphere.**
  Gas leak near the unit could cause fire.

■ Operation Precautions

⚠ Warning
This sign warns of death or serious injury.

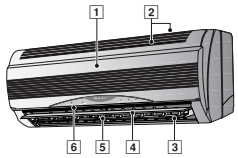
- Do not operate with wet hands.
- Do not insert finger or other objects into the indoor or outdoor units.
- Do not expose directly to cold air for a long period of time.
- Use specified power cord.
- If abnormal condition (burnt smell, etc.) occurs, switch off the power supply.

⚠ Caution
This sign warns of injury.

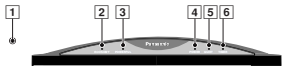
- Do not wash the unit with water.
- Do not use for other purposes such as preservation.
- Do not use any combustible equipment at airflow direction.
- Do not sit or place anything on the outdoor unit.
- Switch off the power supply before cleaning.
- Ventilate the room regularly.
- Pay attention as to whether the installation rack is damaged after a long period of usage.
- Switch off the power supply if the unit is not used for a long period.

NAME OF EACH PART

■ Indoor Unit

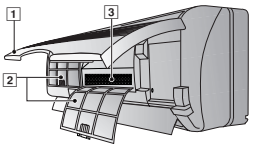


1 Front Panel
2 Air Intake Vent
3 Air Outlet Vent
4 Vertical Airflow Direction Louver
5 Horizontal Airflow Direction Louver (manually adjusted)
6 Indicator Panel



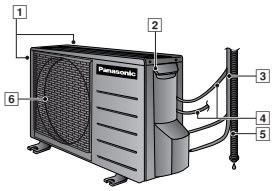
1 Auto Operation Button (when the front panel is opened)
2 Economy Mode Indicator – GREEN
3 Powerful Mode Indicator – ORANGE
4 Power Indicator – GREEN
5 Quiet Mode Indicator – ORANGE
6 Timer Mode Indicator – ORANGE

● **Indoor Unit**
(when the front panel is opened)



1 Front Panel
2 Air Filters
3 Air Purifying Filter

■ Outdoor Unit

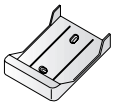


1 Air Intake Vents
2 Ground Terminal (Inside cover)
3 Piping
4 Conduit
5 Drain Hose
6 Air Outlet Vents

■ Accessories

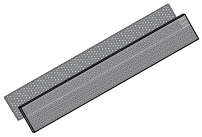
● **Remote Control**

● **Remote Control Holder**

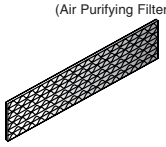


● **Two RO3 (AAA) dry-cell batteries or equivalent**

● **Air Purifying Filter**



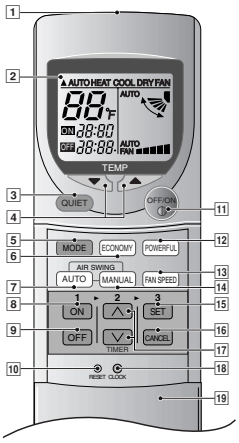
(Air Purifying Filter)



(Solar Refreshing Deodorizing Filter)

NAME OF EACH PART

■ Remote Control

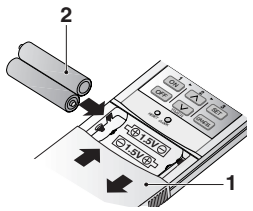


1 Signal Transmitter
2 Operation Display
3 Quiet Mode Operation Button
4 Room Temperature Setting Button (Illuminating button)
5 Operation Mode Selection Button
6 Economy Mode Operation Button
7 Auto Airflow Direction Button
8 ON-Timer Button
9 OFF-Timer Button
10 Reset Point (Press with fine-tipped object to clear the memory)
11 OFF/ON Button (Illuminating button)
12 Powerful Mode Operation Button
13 Fan Speed Selection Button
14 Manual Airflow Direction Selection Button
15 Timer Set Button
16 Timer Cancellation Button
17 Time-Setting Button
18 Clock Button
19 Remote Control Cover

● **Remote Control Signal**
- Make sure it is not obstructed.
- Maximum distance : 10 m (32.8 ft.).
- Signal received sound : One short beep or one long beep.

● **Notes for Remote Control**
- Do not throw or drop.
- Do not get it wet.
- Certain types of fluorescent lamps may affect signal reception. Consult your dealer.

● **How to Insert the Batteries**



1 Slide down the remote control cover completely to remove it.

2 Insert the batteries
– Be sure the direction is correct
– 12:00 on display - flashing
- Set the current time (CLOCK) immediately to prevent battery exhaustion.

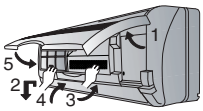
3 Re-install the remote control cover by inserting it in the side groves and pushing inward.

● **About the batteries**
- Can be used for approximately one year.

● **Observe the following when replacing the batteries**
- Replace with new batteries of the same type.
- Do not use rechargeable batteries (Ni-Cd).
- Remove the batteries if the unit is not going to be used for a long period.

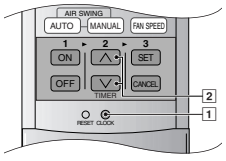
PREPARATION BEFORE OPERATION

■ Indoor Unit



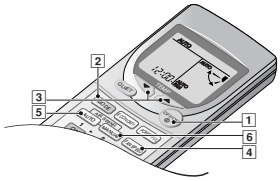
1 Open the front panel
2 Remove the air filters
3 Fit the air purifying filters in place
4 Insert the air filters
5 Close the front panel

■ Remote Control – To set the current time



1 Press 1.
2 Then press 2 to increase or decrease the time.
3 Press 1 again.
Set time on display will light up.

HOW TO OPERATE



■ **To start the operation**
- Press 1.
- POWER indicator (green) on the indoor unit will light up.
- To stop, press once more.

■ **Setting Mode**
- Press 2 to select:-

Cooling Model

AUTO	–	Automatic Operation
COOL	–	Cooling Operation
DRY	–	Soft Dry Operation
FAN	–	Air Circulation Operation

Heat Pump Model

AUTO	–	Automatic Operation
HEAT	–	Heating Operation
COOL	–	Cooling Operation
DRY	–	Soft Dry Operation

■ **Setting Temperature**
- Press 3 to increase or decrease the temperature.
- The temperature can be set between 60°F ~ 86°F.
- Recommended temperature:

Cooling Model	Heat Pump Model
COOL –> 75°F ~ 78°F	COOL –> 75°F ~ 78°F
DRY –> 2°F ~ 4°F lower than the room temperature	DRY –> 2°F ~ 4°F lower than the room temperature
	HEAT –> 68°F ~ 75°F

- During **AUTO** Operation, press 3 to select:-

- Operation with 4°F higher than the standard temperature.
- Operation with the standard temperature.
- Operation with 4°F lower than the standard temperature.

● **Standard Temperature**

Cooling Model

Indoor temperature	Operation	Standard temperature
73°F	Cooling	77°F
	Soft Dry	72°F

- Once the Automatic Operation is selected, the indoor temperature sensor operates automatically to select the desired operation mode with Cooling or Soft Dry.
- After the operation mode has been selected, the mode does not change.

Heat Pump Model

Indoor temperature	Operation	Standard temperature
73°F	Cooling	77°F
	Soft Dry	72°F
68°F	Heating	70°F

- At the beginning of the automatic operation, Heating, Cooling or Soft Dry is automatically selected according to the indoor temperature.
- The operation mode changes every hour, when necessary.

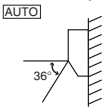
■ **Setting the Fan Speed**
- Press 4 to select:-

FAN ▪ – Low Fan Speed
FAN ▪▪▪ – Medium Fan Speed
FAN ▪▪▪▪▪ – High Fan Speed
AUTO
FAN – Automatic Fan Speed
The speed of the indoor fan is adjusted automatically according to the operation. The indoor fan stops occasionally during cooling operation.

■ **Setting the Vertical Airflow Direction**
- Press 5 or 6 to select:-

Cooling Model

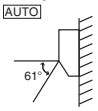
COOL / DRY Operation
AUTO



Swing up/down Automatically

MANUAL
Five stages of adjustment can be made between 14 ~ 36 angle.

FAN Operation
AUTO

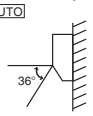


Move up/down Automatically

MANUAL
Five stages of adjustment can be made between 0 ~ 61 angle.

Heat Pump Model

COOL / DRY Operation
AUTO



Swing up/down Automatically

MANUAL
Five stages of adjustment can be made between 14 ~ 36 angle.

HEAT Operation
AUTO
– When the discharge air temperature is low such as at the start of heating operation, the air blows in a horizontal direction. As the temperature rises, the hot air blows in a downward direction.
– To stop this operation, press MANUAL.

MANUAL
Five stages of adjustment can be made between 0 ~ 61 angle.

■ **Setting the Horizontal Airflow Direction**

• Adjust it manually

● **Use this air conditioner under the following conditions:**

Cooling Model

(Unit in °F)

DBT: Dry Bulb Temp WBT: Wet Bulb Temp	Indoor		Outdoor	
	DBT	WBT	DBT	WBT
Maximum Temperature	89.6	73.4	109.4	78.8
Minimum Temperature	60.8	51.8	60.8	51.8

Heat Pump Model

(Unit in °F)

DBT: Dry Bulb Temp WBT: Wet Bulb Temp	Indoor		Outdoor	
	DBT	WBT	DBT	WBT
Maximum Temperature-Cooling (Maximum Temperature-Heating)	89.6 (86)	73.4 (–)	109.4 (75.2)	78.8 (64.4)
Minimum Temperature-Cooling (Minimum Temperature-Heating)	60.8 (60.8)	51.8 (–)	60.8 (23)	51.8 (21.2)

● **Notes**
- If the unit is not going to be used for an extended period of time, turn off the main power supply. If it is left at the ON position, approximately 2.5 W of electricity will be used even if the indoor unit has been turned off with the remote control.
- If operation is stopped, then restart immediately, the unit will resume operation only after 3 minutes.

● **Operation Details**

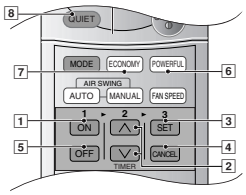
COOL – Cooling Operation
- To set the room temperature at your preference cooling comfort.

AUTO – Automatic Operation
- Sense indoor temperature to select the optimum mode.
- Temperature is not displayed on the remote control during AUTO operation.

DRY – Soft Dry Operation
- A very gentle Cooling Operation, prior to dehumidification. It does not lower the room temperature.
- During Soft Dry operation, the indoor fan operates at Low fan speed.

HEAT – Heating Operation
(for Heat Pump Model only)
- Heat is obtained from outdoor air to warm up the room. When the outdoor ambient air temperature falls, the heating capacity of the unit might be reduced.
- Defrosting Operation
  Depending on the outdoor temperature, the operation occasionally stops to melt the frost on the outdoor unit.

FAN – Air Circulation Operation
(for Cooling Model only)
- When the room temperature reaches the set temperature, operation commences at Low airflow volume. It stops when the room temperature drops to 4°F below the set temperature.
  (It is useful when using a heater).
- Hi fan speed will not operate when using the air circulation Fan mode.



SETTING THE TIMER

Ensure that the current time is correct before setting the timer. The timer cannot be set if the time display is flashing.

■ **ON-TIMER Operation**
To start the air conditioner operation automatically.
- Press 1 to set the operation.
- Press 2 to increase or decrease the time.
- Then press 3.
- To cancel this operation, press 4.

■ **OFF-TIMER Operation**
To stop the air conditioner operation automatically.
- Press 5 to set the operation.
- Press 2 to increase or decrease the time.
- Then press 3.
- To cancel this operation, press 4.

● **Timer Mode Operation Details**
- When the ON-Timer is set, operation will start before the actual set time. This is to enable the room temperature reaches the set temperature at the set time.

Cooling Model	Heat Pump Model
COOL,DRY, AUTO –>15 minutes in advance	COOL,DRY, –>15 minutes in advance HEAT, AUTO–>30 minutes in advance

- Once the ON/OFF Timer is set, operation will start/stop at the set time everyday.
- The current time is not displayed when the timers are set.
- When both timers are used together, the TIMER mode indicator on the indoor unit remains lit even when the operation is stopped by the OFF-TIMER.

CONVENIENCE OPERATION

■ **Powerful Mode Operation**
To obtain the set temperature quickly.
- Press 6.

※ Powerful mode indicator (orange) on the indoor unit will light up.
※ Powerful mode will operate for 15 minutes only.
- To cancel this operation, press once more.

■ **Economy Mode Operation**
To save electrical power consumption.
Please use this mode when the room has reached your desired temperature.
- Press 7.

※ Economy mode indicator (green) on the indoor unit will light up.
- Press once more to cancel this operation.

● **Economy/Powerful Mode Operation Details**
- Economy and Powerful operation cannot be selected simultaneously.
- The changes of the temperature and airflow volume are automatic.
- The remote control display remains unchanged.
- If operation mode button is pressed, economy or powerful operation will be cancelled.
- During **FAN** – Air circulation operation, the powerful and economy operation are not available. (for Cooling Model only)

Economy Mode Operation	Temperature	Airflow volume
COOL / DRY	1°F higher than set temp.	Super Low
HEAT (for Heat Pump model only)	1°F lower than set temp.	Automatic

Powerful Mode Operation	Temperature	Airflow volume
COOL / DRY	5°F lower than set temp.	Super High
HEAT (for Heat Pump model only)	5°F higher than set temp.	Automatic

■ **Quiet Mode Operation**
To provide quiet operation.
- Press 8.

※ Quiet mode indicator on the indoor unit will light up.
- To cancel this operation, press once more.

● **Operation Details**
- Air flow sound will reduce during operation.

CARE AND MAINTENANCE

■ Cleaning the Indoor Unit and Remote Control

- Wipe gently with a soft, dry cloth.
- Do not use water hotter than 104˚F or polishing fluid to clean the unit.

■ Cleaning the Air Filter

(Recommendation:- If the unit is operated in a dusty environment, clean the filters every two weeks. Continuous use of this dirty filters will reduce cooling or heating efficiency)

1 Remove dirt using a vacuum cleaner.
2 Wash back of the air filter with water.
3 If badly soiled, wash it with soap or a mild household detergent.
4 Let it dry and reinstall it.
Be sure the "FRONT" mark is facing you.
※ Damaged air filter.
Consult the nearest authorized dealer.
Part No.: CWD001098.

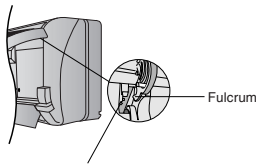
- Do not use benzene, thinner, scouring powder or clothes soaked in caustic chemical to clean the unit.

■ Cleaning the Front Panel

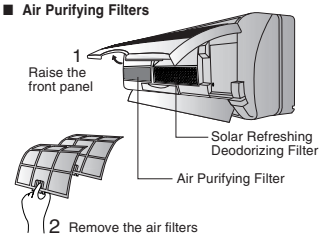
(Must be removed before washing)

1 Raise the front panel higher than the horizontal and pull to remove it.
2 Gently wash with water and a sponge.
- Do not press the front panel too hard when washing.
- When use kitchen cleaning fluid (neutral detergent), rinse throughly.
- Do not dry the front panel under direct sunlight.

3 To affix the front panel, raise the front panel horizontally, match the protruding portion on the indoor unit to the fulcrum and push into place.



■ Air Purifying Filters



- **Solar Refreshing Deodorizing Filter**
  - Used to remove unpleasant odor and deodorize the air in the room.
  - Reusable.
  - Vacuum, place under direct sunlight for 6 hours and fit it back in place.
    (Recommended: every 6 months)
  - Recommended to change this filter every 3 years.

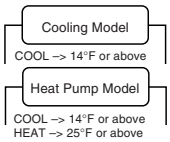
- **Air Purifying Filter**
  - This new filter helps trap small airborne particles such as dust, pollen and tobacco smoke.
  - Recommended : change this filter every 3 months.

- Do not reuse damaged filters.
  Consult the nearest authorized dealer to purchase a new filter.
  Air Purifying Filter No.: CZ-SF51P
  Solar Refreshing Deodorizing Filter No.: CZ-SFD70P

- If you operate the air conditioner with dirty filters:-
  – Air is not purified
  – Cooling or heating capacity decreases
  – Foul odor is emitted

■ Pre-season Inspection

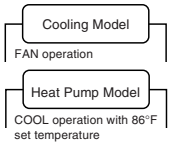
- **Is the discharged air cold/warm?**
  Operation is normal if 15 minutes after the start of operation, the difference between the air intake and outlet vents temperature is:-



- **Are the air intake or outlet vents of the indoor or outbound units obstructed?**
- **Are the remote control batteries weak?**
  If the remote control display appears weak, replace the batteries.

■ When the Air Conditioner is Not Used for an Extended Period of Time

1 To dry the internal parts of the indoor unit, operate the unit for 2 - 3 hours using:-



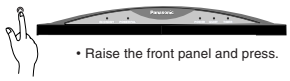
2 Stop the operation by remote control and switch off the circuit breaker.
Note : If the unit is not switched off by the remote control, it will start operating when the circuit breaker is switched to ON. (The unit is equipped with Auto Restart Control.)
3 Remove the remote control batteries.

■ Recommended Inspection

- After used over several seasons, the unit will become dirty and thus decreases the unit's performance. Depending on the operation conditions, a dirty unit may produce odor and dust may pollute dehumidification system. Therefore, a seasonal inspection is recommended in addition to regular cleaning. (Consult an authorized dealer.)

HELPFUL INFORMATION

■ Auto Operation Button



- **Automatic Operation**
  - If the remote control fails to function or has been misplaced, press the Auto Operation button to start the Automatic operation.
  - The Automatic operation will be activated immediately once the Auto operation button is pressed. However, temperature cannot be adjusted when in this mode.
  - The power indicator on the indoor unit will blink until the operation mode is selected automatically.
  - To cancel this operation, press once more.

- **Remote Control Signal Receiving Sound**
  - To switch off the beep (Signal Receiving Sound), press the Auto Operation button for 10 seconds continuously or longer.
    A "beep", "beep" sound will be heard at the tenth seconds.
    Note : A "beep" sound will be heard at the fifth seconds;
    However please press continuously until you heard "beep", "beep" sound.
  - Repeat the above steps if you want to switch on the Signal Receiving Sound.

- **(This is for Servicing purposes only.)**
  Note: If you press this button continuously for 5 to 10 seconds, Test Run operation will be performed. A "beep" sound will be heard after five seconds indicating the Test Run starts to operate.

■ Auto Restart Control

- If power is resumed after a power failure, the operation will restart automatically after 3 - 4 minutes.
- Operation will be restarted automatically under the previous operation mode and airflow direction when power is resumed as the operation is not stopped by the remote control.

■ Timer Setting

- When power failure occurs, the timer setting will be cancelled. Once power is resumed, reset the timer.

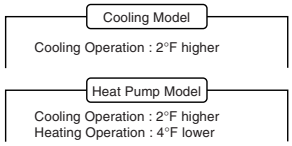
■ Thunder and Lightning

- This air conditioner is equipped with a built-in surge protective device. However, in order to further protect your air conditioner from being damaged by abnormally strong lightning activity, you may switch off the circuit breaker.

ENERGY SAVING AND OPERATION HINTS

■ Setting the Temperature

- Approximately 10% of electricity can be saved.
- Set the temperature higher or lower than the desired temperature.



■ Air Filters

- Clean the air filters every 2 weeks.
- Dirty filters may reduces cooling or heating efficiency.

■ Keep All Doors and Windows Closed

- Otherwise, cooling or heating performance will be reduced and electricity cost is wasted.

■ Outdoor Unit

- Do not block the air outlet vents. Otherwise, it will lower the cooling or heating performance.

■ Timer

- To prevent wastage of electricity, use Timer when going out.

■ Avoid Direct Sunlight

- Keep curtains or drapes closed to avoid direct sunlight during cooling operation.

TROUBLESHOOTING

■ Normal Operation

Is it okay?	Solution
• Air conditioner has been restarted, but does not operate for 3 minutes.	• This is to protect the air conditioner. Wait until the air conditioner begins to operate.
• A sound like water flowing can be heard.	• This is the sound of refrigerant flowing inside the air conditioner.
• It seems that fog is coming out from the air conditioner.	• Condensation occurs when the airflow from the air conditioner cools the room.
• The room has a peculiar odor.	• This may be a damp smell emitted by the wall, carpet, furniture or clothing in the room.
• During Automatic Vertical Airflow setting, indoor fan stops occasionally.	• This is to remove smell emitted by the surroundings.
• The outdoor unit emits water or steam.	• In COOL/DRY operation, moisture in the air condenses into water on the cool surface of outdoor unit piping that causes dripping.
• (For Heat Pump Model only) Operation stops for about 12 minutes during heating (The power indicator blinks.)	• This is to melt the frost which has accumulated on the outdoor unit (defrosting operating). This will take no longer than about 12 minutes. Water drips from the outdoor unit. Wait until this operation ends. (The power indicator will light up.) (Frost accumulates on the outdoor unit when the outdoor temperature is low and humidity is high.)
• (For Heat Pump Model only) During heating operation, indoor fan may run at on and off conditions.	• This is to prevent undesired cooling effect during heating operation.

■ Abnormal Operation

Check the following points before calling for repairs or service. If the malfunction persists, please contact your nearest servicenter. For assistance, please call: (866)-292-7292, for Hawaii residents call (808)-488-7779.

Symptoms?	Please check
• **The air conditioner does not operate.**	• Has the circuit breaker been tripped? • Is the timer being used correctly?
• **Air conditioner produces loud noise during operation.**	• Is the installation work slanted? • Is the front grille closed properly?
• **The air conditioner does not cool or warm effectively.**	• Has the temperature been set incorrectly? • Are the filters dirty? • Are the intake or outlet vents of the outdoor unit obstructed? • Are all windows and doors closed?
• **Remote control / display doesn't work.**	• Batteries not inserted? • Batteries correctly inserted (+) and (–)?

■ Call the Dealer Immediately

If the following conditions occur, turn off the circuit breaker, and then call your authorized Panasonic dealers or servicenter.

- **Abnormal noise is heard during operation.**
- **Water or foreign material gets into the remote control by mistake.**
- **Water leak from the indoor unit.**
- **Switches or buttons do not operate properly.**
- **The circuit breaker switches off frequently.**
- **Power supply cord becomes unusually warm.**

Service information can be obtained by calling (866)-292-7292, for Hawaii residents call (808)-488-7779.

To expedite the repair of your air conditioner:
- Please have your proof of purchase.
- List all symptoms the unit is exhibiting.

PRODUCT SPECIFICATIONS

Models				CS-C9CKPG CU-C9CKP6G	CS-C12CKPG CU-C12CKP6G	CS-A9CKPG CU-A9CKP6G	CS-A12CKPG CU-A12CKP6G
ELECTRICAL RATING	Phase			1	1	1	1
	Frequency		(Hz)	60	60	60	60
	Voltage		(V)	115	115	115	115
COOLING	Capacity		(Btu/h)	8,800	12,300	8,200	12,000
	Current		(Amp)	7.2	10.3	7.4	10.6
	Input Power		(Watts)	790	1,160	810	1,200
	EER		(Btu/Watt.h)	11.10	10.60	10.12	10.00
	SEER			12.4	11.20	10.8	10.6
	Room Air Circulation		(cf/min)	310	340	310	340
HEATING	Capacity		(Btu/h)	–	–	9,200	13,500
	Current		(Amp)	–	–	6.7	10.5
	Input Power		(Watts)	–	–	730	1,190
	COP		(Btu/Watt.h)	–	–	12.60	11.34
	HSPF			–	–	8.0	7.4
	Room Air Circulation		(cf/min)	–	–	350	360
MOISTURE REMOVAL			(pints/h)	1.7	3.0	1.5	2.7
DIMENSIONS	Indoor	Height	cm (inches)	27.5 (10 – 13/16)	←	←	←
		Width	cm (inches)	79.9 (31 – 15/32)	←	←	←
		Depth	cm (inches)	21.0 (8 – 9/32)	←	←	←
	Outdoor	Height	cm (inches)	54.0 (21 – 1/4)	←	←	←
		Width	cm (inches)	78.0 (30 – 23/32)	←	←	←
		Depth	cm (inches)	28.9 (11 – 3/8)	←	←	←
NET WEIGHT	Indoor		kg (lb)	9 (20)	←	←	←
	Outdoor		kg (lb)	29 (64)	33 (73)	31 (68)	35 (77)
GROSS WEIGHT	Indoor		kg (lb)	11 (24)	←	←	←
	Outdoor		kg (lb)	33 (73)	37 (82)	35 (77)	39 (86)

- Specifications are subject to change without notice for further improvement.

■ REFERENCE

Model Number:

Dealer's Address:

Dealer's Tel :

Serial Number :
(Located on the side of unit)

Date of Purchase :

Dealer's Name:

Please affix your proof of purchase here for future reference.

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10 Installation Instructions

Required tools for Installation Works			
1. Philips screw driver	5. Spanner	9. Gas leak detector	13. Multimeter
2. Level gauge	6. Pipe cutter	10. Measuring tape	14. Torque wrench 18 N.m (1.8 kgf.m) 42 N.m (4.2 kgf.m) 55 N.m (5.5 kgf.m)
3. Electric drill, hole core drill (ø70 mm)	7. Reamer	11. Thermometer	15. Vacuum pump
4. Hexagonal wrench (4 mm)	8. Knife	12. Megameter	16. Gauge manifold

10.1. Safety Precautions

- Read the following “SAFETY PRECAUTIONS” carefully before installation.
- Electrical work must be installed by a licensed electrician. Be sure to use the correct rating of the power plug and main circuit for the model to be installed.
- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below. Incorrect installation due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.

⚠ **WARNING**	This indication shows the possibility of causing death or serious injury.

⚠ **CAUTION**	This indication shows the possibility of causing injury or damage to properties only.

The items to be followed are classified by the symbols:

⃠	Symbol with background white denotes item that is PROHIBITED from doing.

- Carry out test running to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the customer to keep the operating instructions for future reference.

⚠ **WARNING**
1. Engage dealer or specialist for installation. If installation done by the user is defective, it will cause water leakage, electrical shock or fire.
2. Install according to this installation instruction strictly. If installation is defective, it will cause water leakage, electrical shock or fire.
3. Use the attached accessories parts and specified parts for installation. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock.
4. Install at a strong and firm location which is able to withstand the set’s weight. If the strength is not enough or installation is not properly done, the set will drop and cause injury.
5. For electrical work, follow the local national wiring standard, regulation and this installation instruction. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough or defect found in electrical work, it will cause electrical shock or fire.
6. Use the UL listed or CSA approved AWG16 wire (or heavier wire) and connect tightly for indoor/outdoor connection. Connect tightly and clamp the cable so that no external force will be acted on the terminal. If connection or fixing is not perfect, it will cause heat-up or fire at the connection.
7. Wire routing must be properly arranged so that control board cover is fixed properly. If control board cover is not fixed perfectly, it will cause heat-up at connection point of terminal, fire or electrical shock.
8. When carrying out piping connection, take care not to let air substances other than the specified refrigerant go into refrigeration cycle. Otherwise, it will cause lower capacity, abnormal high pressure in the refrigeration cycle, explosion and injury.

⚠ CAUTION

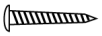
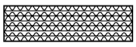
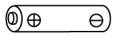
1. The equipment must be earthed. It may cause electrical shock if grounding is not perfect.
2. Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.

3. Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.

ATTENTION

1. Selection of the installation location.
   Select a installation location which is rigid and strong enough to support or hold the unit, and select a location for easy maintenance.
2. Power supply connection to the room air conditioner.
   Connect the power supply cord of the room air conditioner to the mains.
   Power supply point should be in an easily accessible place for power disconnection in case of emergency.
   Power supply connection to a circuit breaker for the permanent connection. Use an approved 15A (CU-C9CKP6G) and 20A (CU-C12CKP6G) fuse or circuit breaker for the permanent connection.
   It must be a double pole switch with a minimum 3 mm contact gap.
3. Do not release refrigerant.
   Do not release refrigerant during piping work for installation, reinstallation and during repairing a refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.
4. Installation work.
   It may need two people to carry out the installation work.
5. Do not install this appliance in a laundry room or other location where water may drip from the ceiling, etc.

Attached accessories

No.	Accesories part	Qty.	No.	Accessories part	Qty.
1	Installation plate	1	5	Air Purufying filter	1
2	Installation plate fixing screw 	6	6	Solar refreshing deodorizing filter 	1
3	Remote control	1	7	Remote Control holder	1
4	Battery 	2	8	Remote Control holder fixing screw	2

Applicable piping kit

CZ-3F5, 7AEN (CS-C9CKPG)

CZ-4F5, 7, 10AN (CS-C12CKPG)

SELECT THE BEST LOCATION

INDOOR UNIT

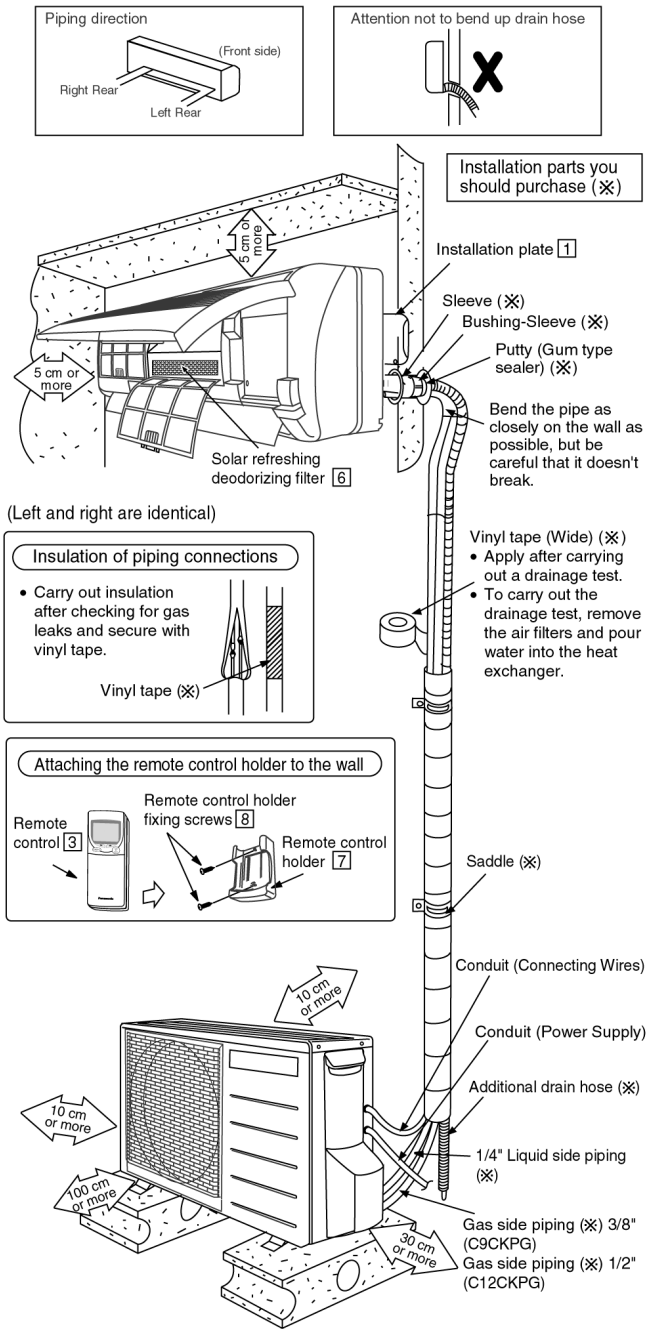
- There should not be any heat source or steam near the unit.
- There should not be any obstacles blocking the air circulation.
- A place where air circulation in the room is good.
- A place where drainage can be easily done.
- A place where noise prevention is taken into consideration.
- Do not install the unit near the door way.
- Ensure there is adequate space (indicated by arrows) from the wall, ceiling, fence or other obstacles.
- Recommended installation height for indoor unit shall be at least 7.5 ft (2.3 m).

OUTDOOR UNIT

- If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed.
- Keep animals or plants away from the unit as they may be affected by the hot air discharged.
- Keep the spaces (indicated by arrows) from wall, ceiling, fence or other obstacles.
- Do not place near any obstacles which may cause a short circuit of the discharged air.
- If piping length is over the common length, additional refrigerant should be added as shown in the table.

Model	Piping size		Common Length ft (m)	Max. Elevation ft (m)	Max. Piping Length ft (m)	Additional Refrigerant (g/m)
	Gas	Liquid				
CS-C9CKPG	3/8"	1/4"	24.6 ft (7.5 m)	16.4 ft (5 m)	32.8 ft (10 m)	0.11 oz/ft (10 g/m)
CS-C12CKPG	1/2"	1/4"	24.6 ft (7.5 m)	16.4 ft (5 m)	49.2 ft (15 m)	0.11 oz/ft (10 g/m)

Indoor/Outdoor Unit Installation Diagram


Piping direction
(Front side)
Right Rear
Left Rear
Attention not to bend up drain hose
Installation parts you should purchase (※)
5 cm or more
Installation plate 1
Sleeve (※)
Bushing-Sleeve (※)
Putty (Gum type sealer) (※)
5 cm or more
Bend the pipe as closely on the wall as possible, but be careful that it doesn't break.
Solar refreshing deodorizing filter 6
(Left and right are identical)
Insulation of piping connections
• Carry out insulation after checking for gas leaks and secure with vinyl tape.
Vinyl tape (※)
Vinyl tape (Wide) (※)
• Apply after carrying out a drainage test.
• To carry out the drainage test, remove the air filters and pour water into the heat exchanger.
Attaching the remote control holder to the wall
Remote control 3
Remote control holder fixing screws 8
Remote control holder 7
Saddle (※)
Conduit (Connecting Wires)
10 cm or more
Conduit (Power Supply)
Additional drain hose (※)
10 cm or more
1/4" Liquid side piping (※)
100 cm or more
Gas side piping (※) 3/8" (C9CKPG)
30 cm or more
Gas side piping (※) 1/2" (C12CKPG)

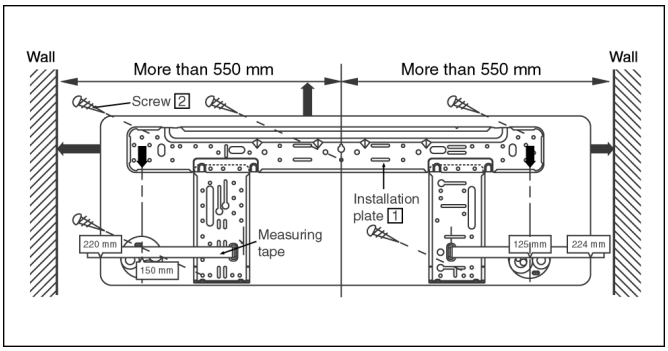
- This illustration is for explanation purposes only. The indoor unit will actually face a different way.

10.2. INDOOR UNIT

10.2.1. SELECT THE BEST LOCATION (Refer to "Select the best location" section)

10.2.2. HOW TO FIX INSTALLATION PLATE

The mounting wall is strong and solid enough to prevent it from the vibration.



The centre of installation plate should be at more than 550 mm at right and left of the wall.

The distance from installation plate edge to ceiling should more than 67 mm.

From installation plate left edge to unit's left side is 47 mm.

From installation plate right edge to unit's right is 73 mm.

Ⓑ : For left side piping, piping connection for liquid should be about 126 mm from this line.
: For left side piping, piping connection for gas should be about 174 mm from this line.
: For left side piping, piping connecting cable should be about 984 mm from this line.

1. Mount the installation plate on the wall with 5 screws or more.
   (If mounting the unit on the concrete wall consider using anchor bolts.)
   - Always mount the installation plate horizontally by aligning the marking-off line with the thread and using a level gauge.

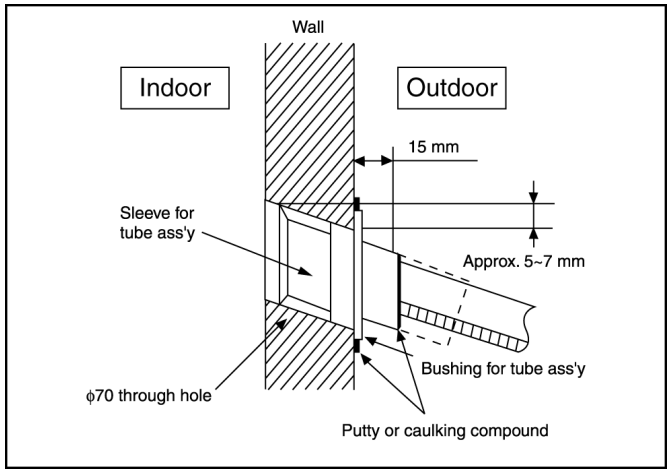
2. Drill the piping plate hole with ø70 mm hole-core drill.
   - Line according to the arrows marked on the lower left and right side of the installation plate. The meeting point of the extended line is the centre of the hole. Another method is by putting measuring tape at position as shown in the diagram above. The hole centre is obtained by measuring the distance namely 150 mm and 125 mm for left and right hole respectively.
   - Drill the piping hole at either the right or the left and the hole should be slightly slanted to the outdoor side.

10.2.3. TO DRILL A HOLE IN THE WALL AND INSTALL A SLEEVE OF PIPING

1. Insert the piping sleeve to the hole.
2. Fix the bushing to the sleeve.
3. Cut the sleeve until it extrudes about 15 mm from the wall.

Caution
When the wall is hollow, please be sure to use the sleeve for tube ass'y to prevent dangers caused by mice biting the connecting cable.

4. Finish by sealing the sleeve with putty or caulking compound at the final stage.



10.2.4. INDOOR UNIT INSTALLATION

1. **For the right rear piping**

Pull out the Indoor piping
↓
Install the Indoor Unit
↓
Secure the Indoor Unit
↓
Insert the connecting wire

2. For the embedded piping

Replace the drain hose

↓

Bend the embedded piping

↓

- Use a spring bender or equivalent to bend the piping so that the piping is not crushed.

Install the Indoor Unit

↓

Cut and flare the embedded piping

↓

- When determing the dimension of the piping, slide the unit all the way to the left on the installation plate.
  Refer to the section "Cutting and flaring the piping".

Pull the connecting wire into Indoor Unit

↓

- The inside and outside connecting wire can be connected without removing the front grille.

Connect the piping

↓

- Please refer to "Connecting the piping" column in outdoor unit section. (Below steps are done after connecting the outdoor piping and gas-leakage confirmation.)

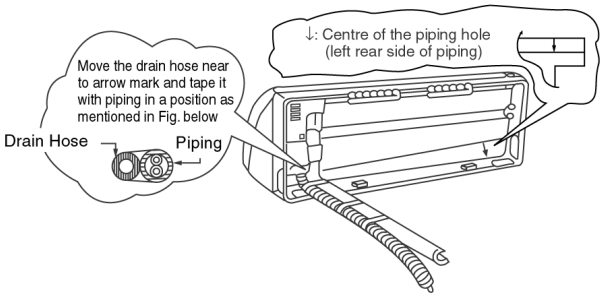
Insulate and finish the piping

↓

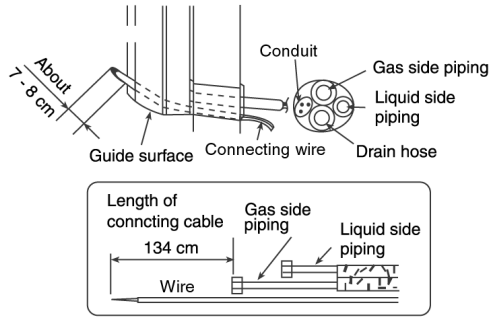
- Please refer to "Piping and finishing" column of outdoor section and "Insulation of piping connections" column as mentioned in Indoor/ Outdoor Unit Installation.

Secure the Indoor Unit

Pull out the piping and drain hose

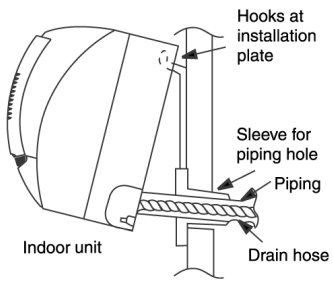

↓: Centre of the piping hole
(left rear side of piping)
Move the drain hose near to arrow mark and tape it with piping in a position as mentioned in Fig. below
Drain Hose
Piping

Insert the connecting wire



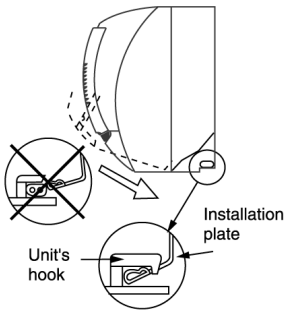
Install the Indoor Unit

Hook the indoor unit onto the upper portion of installation plate (Engage the indoor unit with the upper edge of the installation plate). Ensure the hooks are properly seated on the installation plate by moving in left and right.

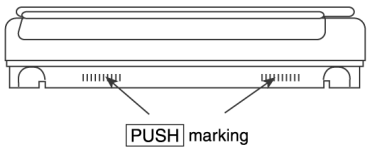


Secure the Indoor Unit

1. Tape the extra power supply cord in a bundle and keep it behind the chassis.
   - Ensure that the power supply cord is not clamped in between the unit's hook (2 positions) and installation plate.
2. Press the lower left and right side of the unit against the installation plate until hooks engages with their slots (a click will be heard).



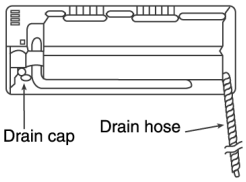
To take out the unit, push the PUSH marking at the bottom unit, and pull it slightly towards you to disengage the hooks from the unit.

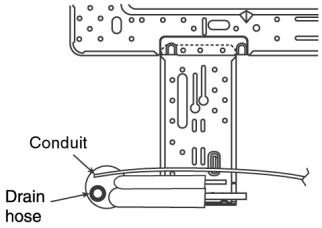


(This can be used for left rear piping & left bottom piping also.)

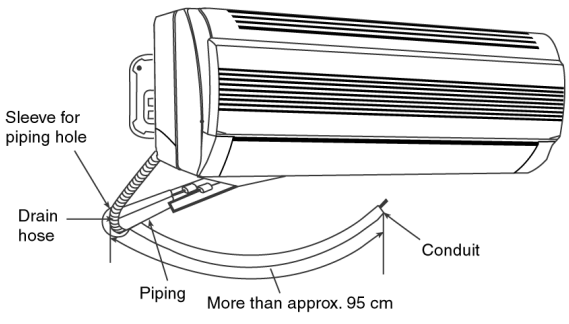
Exchange the drain hose and the cap

Refer view for left piping installation

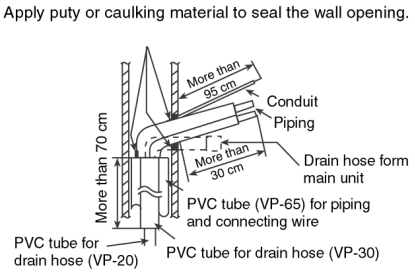


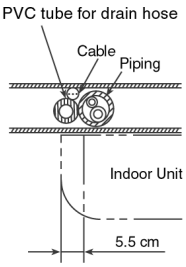


Adjust the piping slightly downwards



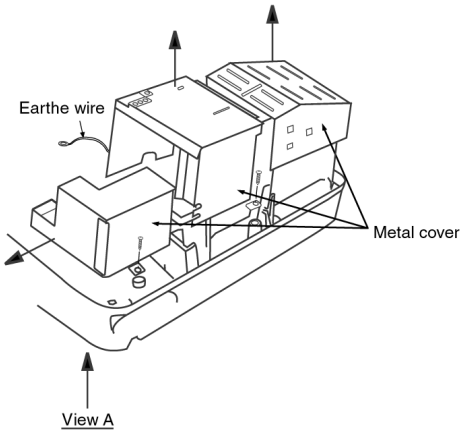
• How to pull the piping and drain hose out, in case of the embedded piping.


Apply puty or caulking material to seal the wall opening.
More than 95 cm
Conduit
Piping
More than 70 cm
More than 30 cm
Drain hose form main unit
PVC tube (VP-65) for piping and connecting wire
PVC tube for drain hose (VP-20)
PVC tube for drain hose (VP-30)

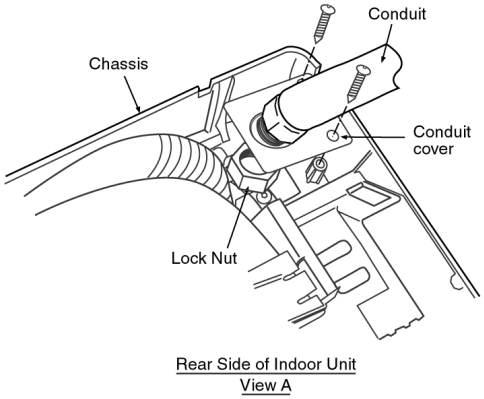


10.2.5. INDOOR UNIT ELECTRICAL WIRING

1. Remove the control board metal cover.



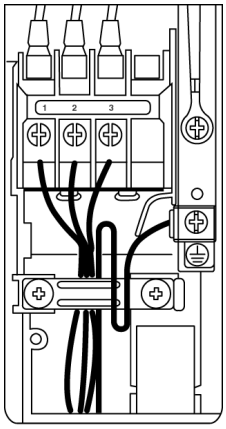
2. Unscrew the conduit cover & fix the conduit connector to conduit cover with lock nut, then secure it against chassis.



3. Connecting between indoor unit and outdoor unit should be UL listed or CSA approved 4 × AWG16 wire.
   - Ensure the color of wires of outdoor unit and the terminal Nos. are the same as the indoor's respectively.
   - Earth lead wire should be longer than the other lead wires as shown in the figure for the electrical safety in case the cord slips out from the anchorage.

CS/CU-C9CKPG, C12CKPG

Terminals on the indoor unit	1	2	3	⏚
Color of wires				
Terminals on the outdoor unit	1	2	3	⏚



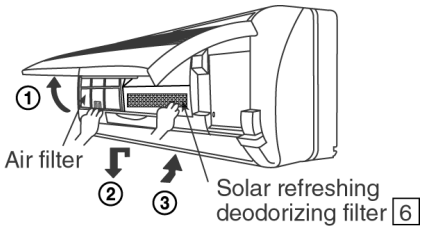
C9CKPG, C12CKPG

- Secure the wire onto the control board with the holder (clamper).

4. After completed wiring connection, fix back the metal cover to the original location.

INSTALLATION OF AIR PURIFYING FILTERS

1. Open the front panel.
2. Remove the air filters.
3. Put air purifying filters (left) and solar refreshing deodorizing filter (right) into place as shown in illustration below.

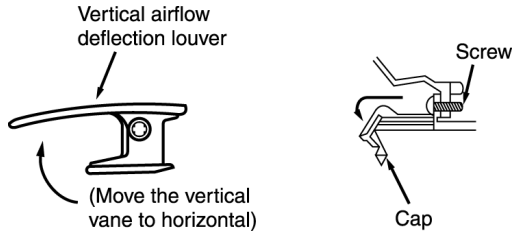


HOW TO TAKE OUT FRONT GRILLE

Please follow the steps below to take out front grille if necessary such as when servicing.

1. Set the vertical airflow direction louver to the horizontal position.
2. Slide down the three caps on the front grille as shown in the illustration below, and then remove the three mounting screws.
3. Pull the lower section of the front grille towards you to remove the front grille.

When reinstalling the front grille, first set the vertical airflow direction louver to the horizontal position and then carry out above steps 2 - 3 in the reverse order.



AUTO SWITCH OPERATION

The below operations will be performed by pressing the "AUTO" switch.

1. AUTO OPERATION MODE

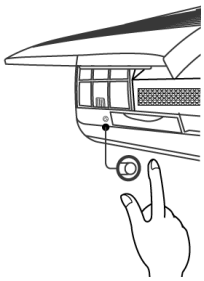
   The Auto operation will be activated immediately once the Auto Switch is pressed.

2. TEST RUN OPERATION (FOR PUMP DOWN/SERVICING PURPOSE)

   The Test Run operation will be activated if the Auto Switch is pressed continuously for more than 5 sec. to below 10 sec.. A "pep" sound will occur at the fifth sec., in order to identify the starting of Test Run operation

3. REMOTE CONTROLLER RECEIVING SOUND ON/OFF

   The ON/OFF of Remote Controller receiving sound can be change over by pressing the "AUTO" Switch continuously for 10 sec. and above. A "pep", "pep" sound will occur at the tenth sec., in order to indicate the "ON/OFF" change over of remote control receiving sound.



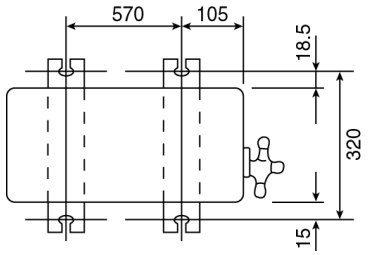
10.3. OUTDOOR UNIT

10.3.1. SELECT THE BEST LOCATION (Refer to "Select the best location" section)

10.3.2. INSTALL THE OUTDOOR UNIT

- After selecting the best location, start installation according to Indoor/Outdoor Unit Installation Diagram.

1. Fix the unit on concrete or rigid frame firmly and horizontally by bolt nut. (ø10 mm).
2. When installing at roof, please consider strong wind and earthquake. Please fasten the installation stand firmly with bolt or nails.



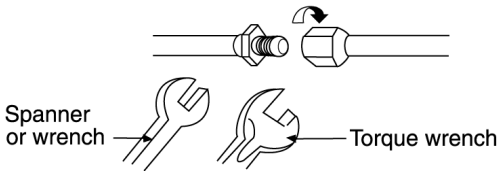
10.3.3. CONNECTING THE PIPING

Connecting The Piping To Indoor Unit

Please make flare after inserting flare nut (locate at joint portion of tube assembly) onto the copper pipe. (In case of using long piping)

Connect the piping

- Align the center of piping and sufficiently tighten the flare nut with fingers.
- Further tighten the flare nut with torque wrench in specified torque as stated in the table.



MODEL	Piping size (Torque)	
	Gas	Liquid
CS-C9CKPG	3/8" (42 N.m)	1/4" (18 N.m)
CS-C12CKPG	1/2" (55 N.m)	1/4" (18 N.m)

Connecting The Piping To Outdoor Unit

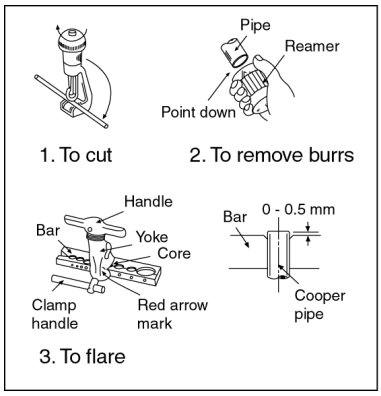
Decide piping length and then cut by using pipe cutter. Remove burrs from cut edge. Make flare after inserting the flare nut (located at valve) onto the copper pipe.

Align center of piping to valves and then tighten with torque wrench to the specified torque as stated in the table.

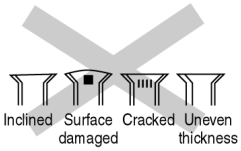
CUTTING AND FLARING THE PIPING

1. Please cut using pipe cutter and then remove the burrs.
2. Remove the burrs by using reamer. If burrs is not removed, gas leakage may be caused.

   Turn the piping end down to avoid the metal powder entering the pipe.
3. Please make flare after inserting the flare nut onto the copper pipes.



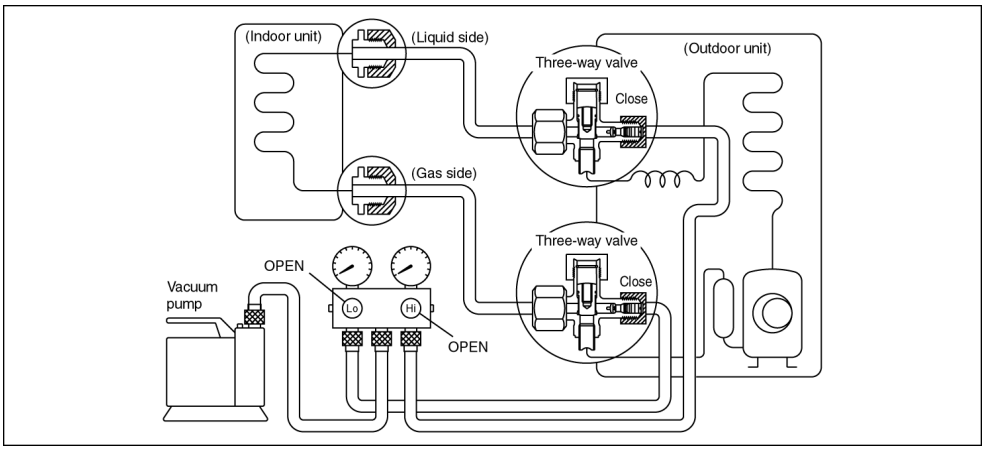
■ Improper flaring ■



When properly flared, the internal surface of the flare will evenly shine and be of even thickness. Since the flare part comes into contact with the connections, carefully check the flare finish.

10.3.4. EVACUATION OF THE EQUIPMENT

WHEN INSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.



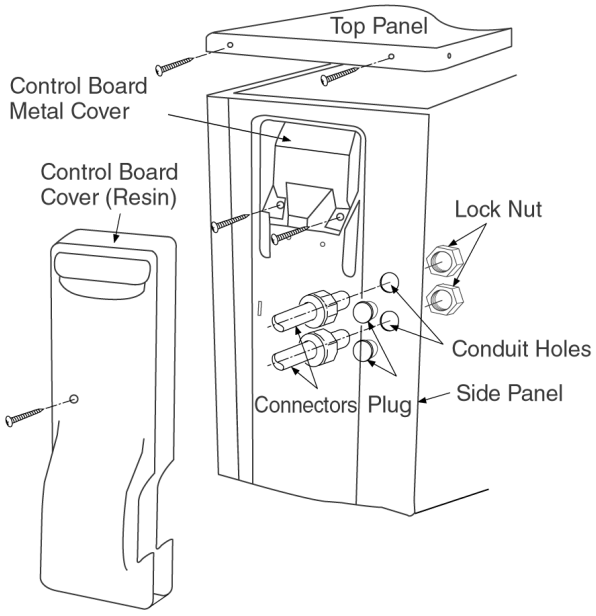
1. Connect a charging hose with a push pin to the Low and High side of a charging set and the service port of the 3-way valve.
   - Be sure to connect the end of the charging hose with the push pin to the service port.
2. Connect the center hose of the charging set to a vacuum pump.
3. Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa). Then evacuate the air approximately ten minutes.
4. Close the valve of both the Low and High sides of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.

   Note: BE SURE TO FOLLOW THIS PROCEDURE IN ORDER TO AVOID REFRIGERANT GAS LEAKAGE.
5. Disconnect the charging hose from the vacuum pump and from the service port of the 3-way valve.
6. Tighten the service port caps of the 3-way valve at a torque of 18 N.m with a torque wrench.
7. Remove the valve caps of both of the 2-way valve and 3-way valve. Position both of the valves to “OPEN” using a hexagonal wrench (4 mm).
8. Mount valve caps onto the 2-way valve and the 3-way valve.
   - Be sure to check for gas leakage.

CAUTION

- If gauge needle does not move from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa), in step 3 above take the following measure:
- If the leak stops when the piping connections are tightened further, continue working from step 3.
- If the leak does not stop when the connections are retightened, repair the location of leak.
- Do not release refrigerant during piping work for installation and reinstallation. Take care of the liquid refrigerant, it may cause frostbite.

10.3.5. OUTDOOR UNIT ELECTRICAL WIRING



1. Remove Top Panel.
2. Remove Control Board Cover (Metal & Resin).
3. Remove Plugs.
4. Fix the conduit connector to the conduit hole with lock-nut, then secure it.
5. Connecting wire between indoor unit and outdoor unit should be UL listed or CSA approved 4 × AWG16 wire.

CS/CU-C9CKPG, C12CKPG

Terminals on the indoor unit	1	2	3	⏚
Color of wires				
Terminals on the outdoor unit	1	2	3	⏚

6. Secure the wire onto the control board with the holder (clamper).
7. Wire connection to the power supply (115V 60Hz) through circuit breaker.
   - Connect the UL listed or CSA approved wires (AWG14) to the terminal board, and connect the other end of the wires to circuit breaker.

Terminals on the outdoor unit	L	N	⏚
Color of wires			
Terminals on the circuit breaker	(L)	(N)	⏚

Note: Secure the wires onto the control board with the holder (clamper).

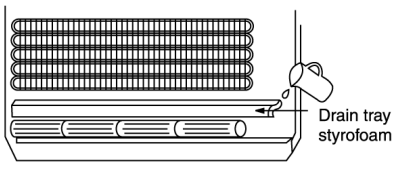
8. After completed wiring connection, fix back the control board cover (metal and resin) and the top panel to the original position with the screws.

10.3.6. PIPE INSULATION

1. Please carry out insulation at pipe connection portion as mentioned in Indoor/Outdoor Unit Installation Diagram. Please wrap the insulated piping end to prevent water from going inside the piping.
2. If drain hose or connecting piping is in the room (where dew may form), please increase the insulation by using POLY-E FOAM with thickness 6 mm or above.

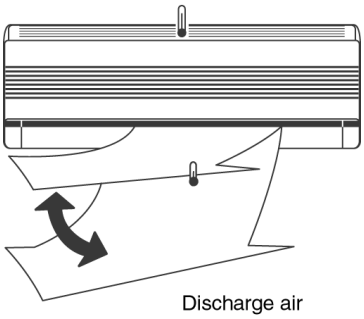
CHECK THE DRAINAGE

- Open front panel and remove air filters.
  (Drainage checking can be carried out without removing the front grille.)
- Pour a glass of water into the drain tray-styrofoam.
- Ensure that water flows out from drain hose of the indoor unit.



EVALUATION OF THE PERFORMANCE

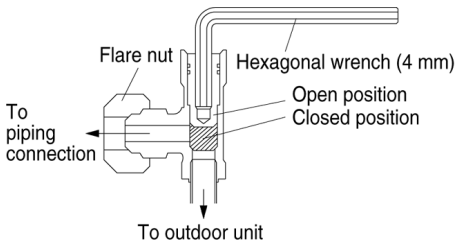
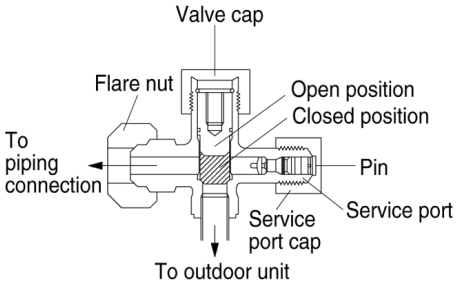
- Operate the unit at cooling operation mode for fifteen minutes or more.
- Measure the temperature of the intake and discharge air.
- Ensure the difference between the intake temperature and the discharge is more than 8°C (46.4°F).



CHECK ITEMS

- ☐ Is there any gas leakage at flare nut connections?
- ☐ Has the heat insulation been carried out at flare nut connection?
- ☐ Is the connecting wire being fixed to terminal board firmly?
- ☐ Is the connecting wire being clamped firmly?
- ☐ Is the drainage OK? (Refer to “Check the drainage” section)
- ☐ Is the earth wire connection properly done?
- ☐ Is the indoor unit properly hooked to the installation plate?
- ☐ Is the power supply voltage complied with rated value?
- ☐ Is there any abnormal sound?
- ☐ Is the cooling operation normal?
- ☐ Is the thermostat operation normal?
- ☐ Is the remote control’s LCD operation normal?
- ☐ Is the air purifying filter installed?

11 2-way, 3-way Valve

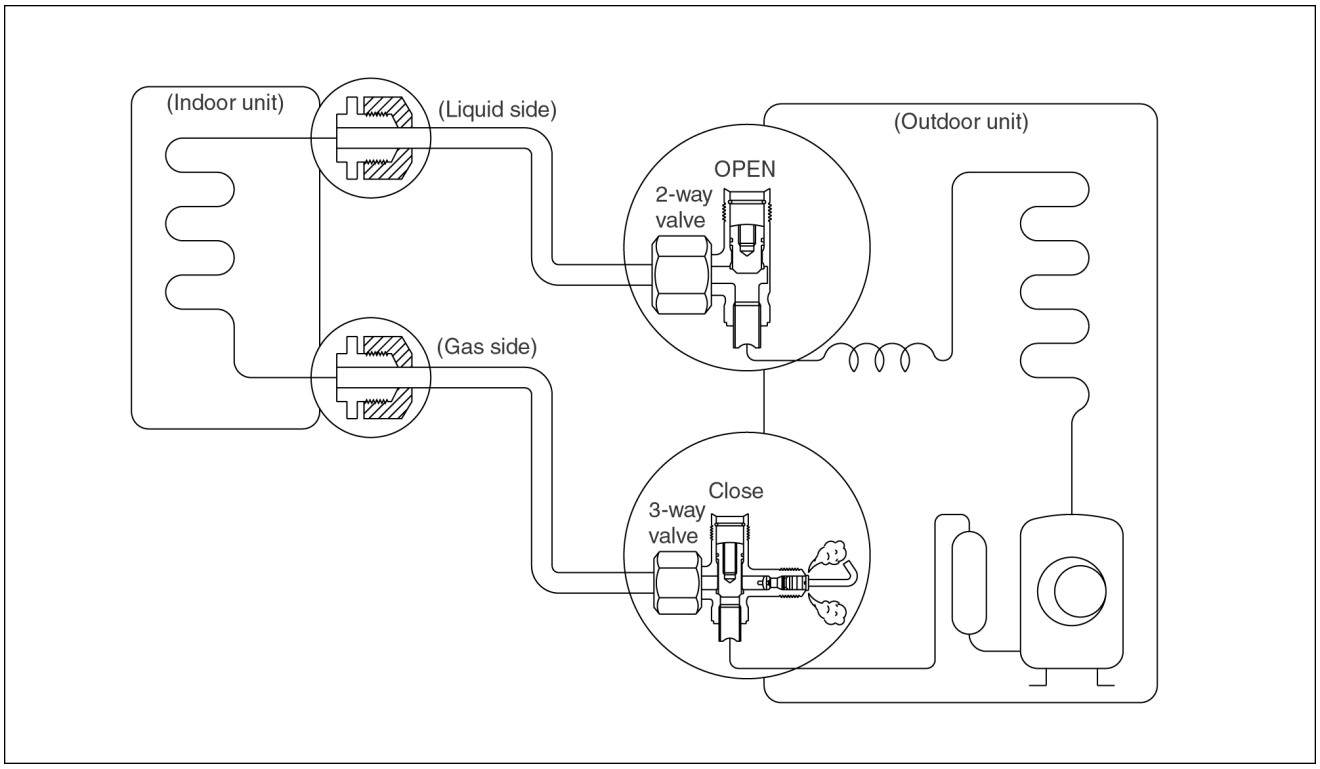
	2-way Valve (Liquid Side)	3-way Valve (Gas Side)	
			
Works	Shaft Position	Shaft Position	Service Port
Shipping	Close (With valve cap)	Close (With valve cap)	Close (With cap)
Evacuation (Installation and Re-installation)	Close (Counter-Clockwise)	Close (Clockwise)	Open (Push-pin)
Operation	Open (With valve cap)	Open (With valve cap)	Close (With cap)
Pumping down (Transferring)	Close (Clockwise)	Open (Counter-Clockwise)	Open (Connected manifold gauge)
Evacuation (Servicing)	Open	Open	Open With vacuum pump
Gas charging (Servicing)	Open	Open	Open (With charging cylinder)
Pressure check (Servicing)	Open	Open	Open (Connected manifold gauge)
Gas releasing (Servicing)	Open	Open	Open (Connected manifold gauge)

11.1. Air Purging of the Piping and Indoor Unit

11.1.1. Air purging (Installation)

Required tools: hexagonal wrench, adjustable wrench, torque wrenches, wrench to hold the joints and gas leak detector.
The additional gas for air purging has been charged in the outdoor unit.
However, if the flare connections have not been done correctly and there gas leaks, a gas cylinder and the charge set will be needed.

The air in the indoor unit and in the piping must be purged. If air remains in the refrigeration pipings, it will affect the compressor, reduce the cooling capacity, and could lead to a malfunction.



Service port cap
Be sure, using a torque wrench to tighten the service port cap (after using the service port), so that it prevents the gas leakage from the refrigeration cycle.

Procedure:

1. **Recheck the piping connections.**
2. **Open the valve stem of the 2-way valve counter-clockwise approximately 90°, wait 10 seconds, and then set it to closed position.**
   - Be sure to use a hexagonal wrench to operate the valve stem.
3. **Check for gas leakage.**
   - Check the flare connection for gas leakage.
4. **Purge the air from the system**
   - Set the 2-way valve to the open position and remove the cap from the 3-way valve's service port.
   - Using the hexagonal wrench to press the valve core pin, discharge for three seconds and then wait for one minute.
     Repeat this three times.
5. **Use torque wrench to tighten the service port cap to a torque of 1.8 kg.m. (18 N.m).**
6. **Set the 3-way valve to the opened position.**
7. **Mount the valve stem nuts to the 2-way and 3-way valves.**
8. **Check for gas leakage.**
   - At this time, especially check for gas leakage from the 2-way and 3-way's stem nuts, and from the service port cap.

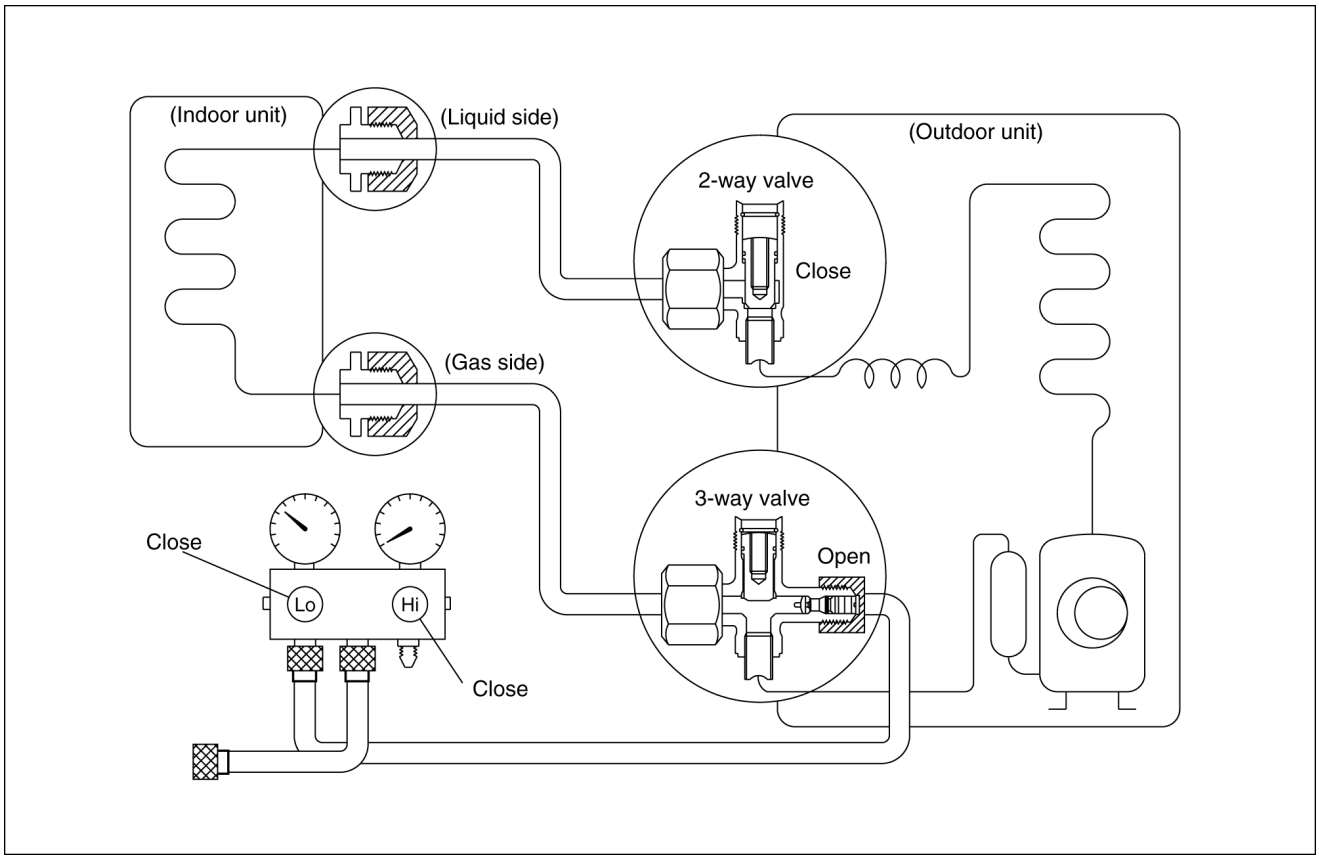
Caution

If gas leakage is discovered in step (3) above, take the following measures:

If the leaks stop when the piping connections are tightened further, continue working from step (4).

If the gas leaks do not stop when the connections are retightened, repair the location of the leak, discharge all of the gas through the service port, and then recharge with the specified amount of gas from a gas cylinder.

11.1.2. Pumping down (Re-installation)



Procedure:

1. **Confirm that both the 2-way and 3-way valves are set to the opened position.**
   - Remove the valve stem caps and confirm that the valve stems are in the opened position.
   - Be sure to use a hexagonal wrench to operate the valve stems.

2. **Operate the unit for 10 to 15 minutes.**

3. **Stop operation and wait for 3 minutes, then connect the charge set to the service port of the 3-way valve.**
   - Connect the charge hose with the push pin to the Gas service port.

4. **Air purging of the charge hose.**
   - Open the low-pressure valve on the charge set slightly to purge air from the charge hose.

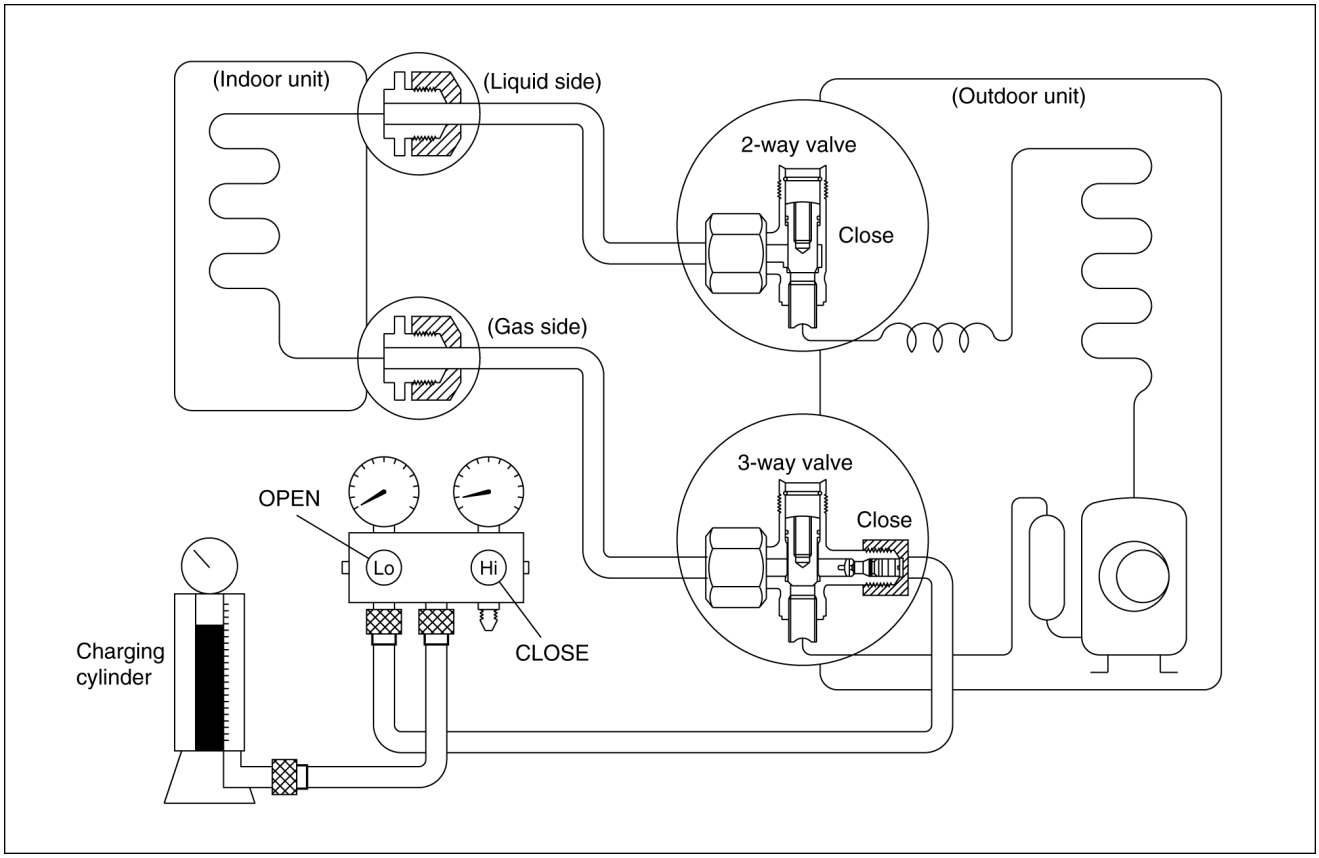
5. **Set the 2-way valve to the close position.**

6. **Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 1 kg/cm^{2}G (0.1 MPa).**

7. **Immediately set the 3-way valve to the closed position.**
   - Do this quickly so that the gauge ends up indicating 3 to 5 kg/cm^{2}G (0.3 to 0.5 MPa).

8. **Disconnect the charge set, and mount the 2-way and 3-way valve's stem nuts and the service port caps.**
   - Use a torque wrench to tighten the service port cap to a torque of 1.8 kg.m (18 N.m).
   - Be sure to check for gas leakage.

11.1.3. Re-air purging (Re-installation)



Procedure:

1. **Confirm that both the 2-way and 3-way valves are set to the closed position.**

2. **Connect the charge set and a charging cylinder to the service port of the 3-way valve.**
   - Leave the valve on the charging cylinder closed.

3. **Air purging.**
   - Open the valves on the charging cylinder and the charge set. Purge the air by loosening the flare nut on the 2-way valve approximately 45° for 3 seconds then closing it for 1 minute; repeat 3 times.
   - After purging the air, use a torque wrench to tighten the flare nut on the 2-way valve.

4. **Check for gas leakage.**
   - Check the flare connections for gas leakage.

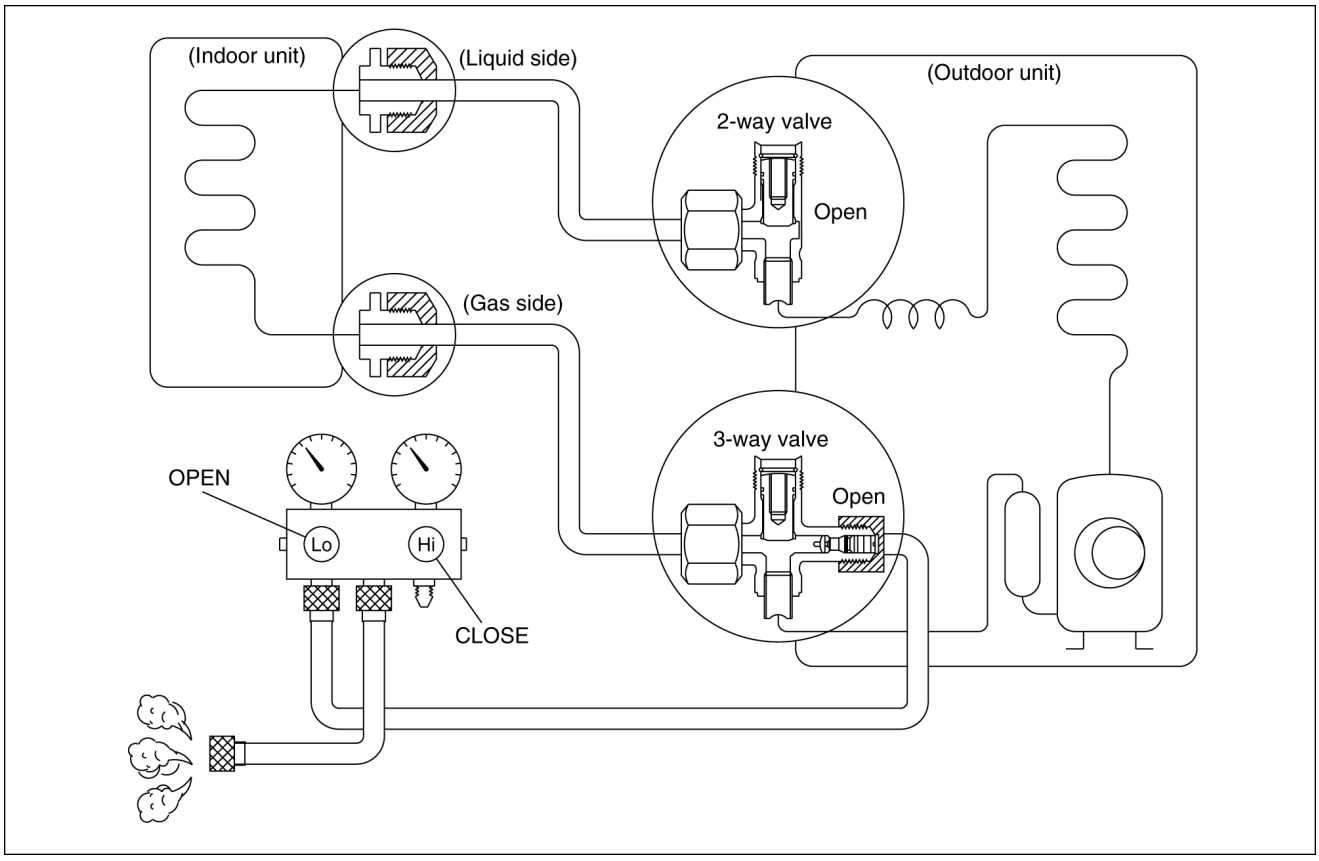
5. **Discharge the refrigerant.**
   - Close the valve on the charging cylinder and discharge the refrigerant until the gauge indicates 3 to 5 kg/cm^{2}G (0.3 to 0.5 MPa)

6. **Disconnect the charge set and the charging cylinder, and set the 2-way and 3-way valves to the open position.**
   - Be sure to use a hexagonal wrench to operate the valve stems.

7. **Mount the valve stem nuts and the service port cap.**
   - Be sure to use a torque wrench to tighten the service port cap to a torque 1.8 kg.m (18 N.m).
   - Be sure to check for gas leakage.

11.1.4. Balance refrigerant of the 2-way, 3-way valves

(Gas leakage)



Procedure:

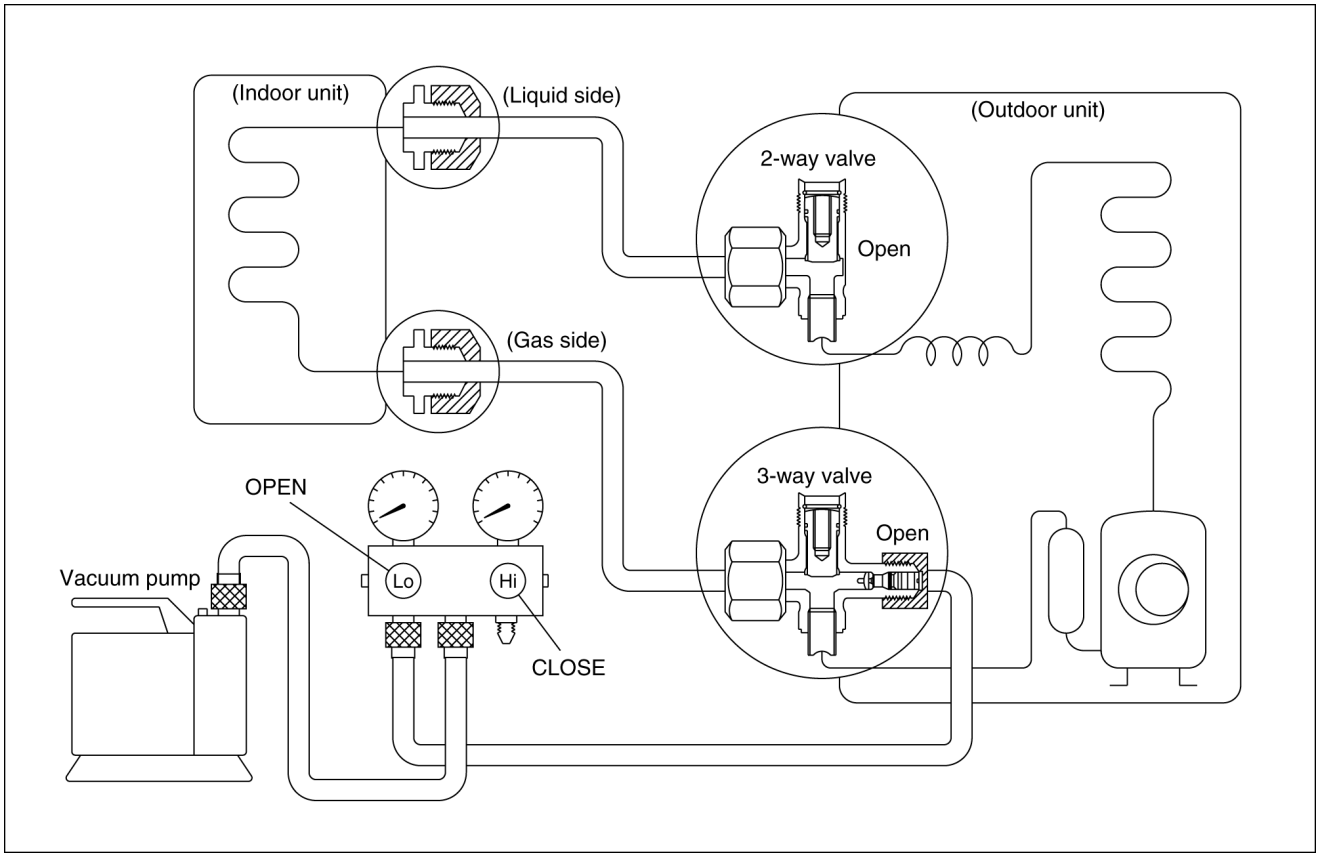
1. **Confirm that both the 2-way and 3-way valves are set to the open position.**

2. **Connect the charge set to the 3-way valve's service port.**
   - Leave the valve on the charge set closed.
   - Connect the charge hose with the push pin to the service port.

3. **Open the valves (Low side) on the charge set and discharge the refrigerant until the gauge indicates 0.5 to 1 kg/cm^{2}G (0.05 to 0.1 MPa) .**
   - If there is no air in the refrigeration cycle [the pressure when the air conditioner is not running is higher than 1 kg/cm^{2}G (0.1 MPa)], discharge the refrigerant until the gauge indicates 0.5 to 1 kg/cm^{2}G (0.05 to 0.1 MPa). If this is the case, it will not be necessary to apply a evacuation.
   - Discharge the refrigerant gradually; if it is discharged too suddenly, the refrigeration oil will be discharged.

11.1.5. Evacuation (Installation)

(No refrigerant in the refrigeration cycle)



Procedure:

1. **Connect the vacuum pump to the charge set's centre hose.**

2. **Evacuation for approximately one hour.**
   - Confirm that the gauge needle has moved toward -0.1 MPa (-76 cmHg) [vacuum of 4 mmHg or less.]

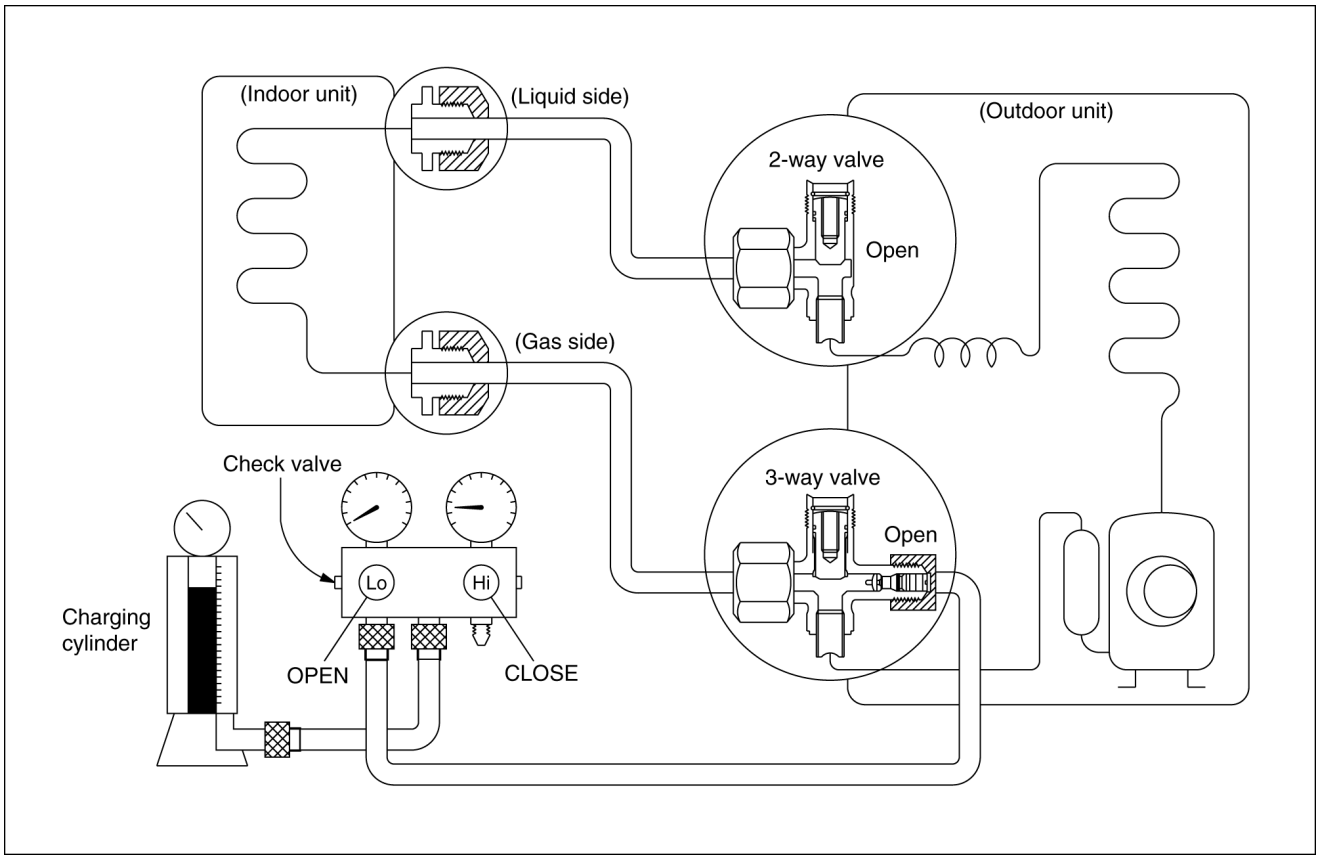
3. **Close the valve (Low side) on the charge set, turn off the vacuum pump, and confirm that the gauge needle does not move (approximately 5 minutes after turning off the vacuum pump).**

4. **Disconnect the charge hose from the vacuum pump.**
   - Vacuum pump oil

     If the vacuum pump oil becomes dirty or depleted, replenish as needed.

11.1.6. Gas charging

(After Evacuation)



Procedure:

1. **Connect the charge hose to the charging cylinder.**
   - Connect the charge hose which you disconnected from the vacuum pump to the valve at the bottom of the cylinder.
2. **Purge the air from the charge hose.**
   - Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air (be careful of the liquid refrigerant).
3. **Open the valve (Low side) on the charge set and charge the system with liquid refrigerant.**
   - If the system cannot be charged with the specified amount of refrigerant, it can be charged with a little at a time (approximately 150 g each time) while operating the air conditioner in the cooling cycle; however, one time is not sufficient, wait approximately 1 minute and then repeat the procedure. (pumping down-pin)

This is different from previous procedures. Because you are charging with liquid refrigerant from the gas side, absolutely do no attempt to charge with large amount of liquid refrigerant while operating the air conditioner.

4. **Immediately disconnect the charge hose from the 3-way valve's service port.**
   - Stopping partway will allow the refrigerant to be discharged.
   - If the system has been charged with liquid refrigerant while operating the air conditioner, turn off the air conditioner before disconnecting the hose.
5. **Mount the valve stem caps and the service port cap.**
   - Use torque wrench to tighten the service port cap to a torque of 18 N.m.
   - Be sure to check for gas leakage.

12 Servicing Information

Caution:

- Pb free solder has a higher melting point than standard solder; Typically the melting point is 50 - 70°F (30 - 40°C) higher. Please use a high temperature soldering iron. In case of the soldering iron with temperature control, please set it to 700 ± 20°F (370 ± 10°C).
- Pb free solder will tend to splash when heated too high (about 1100° F/600°C).

12.1. Indoor Electronic Controllers Removal Procedures

1. The Electronic Controller, a Signal Receiver and an Indicator (Fig. 3) can be seen by the below steps:

   - Remove the 2 caps and 2 screws at the bottom of the Front Grille. (Fig. 1)
   - Remove the Front Grille by releasing the 2 hooks at the top of the Front Grille. (Fig. 1)

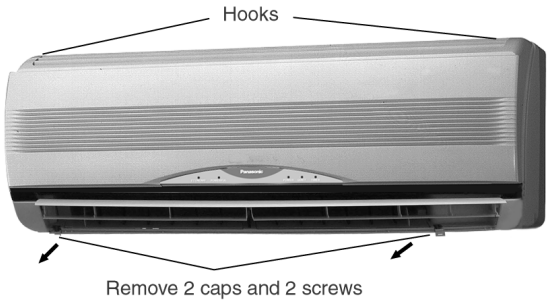


Fig. 1

   - Remove the Control Board Cover by releasing the 2 tabs at left, 1 tab on top and 1 tab at right side of the Control Board Cover. (Fig. 2)

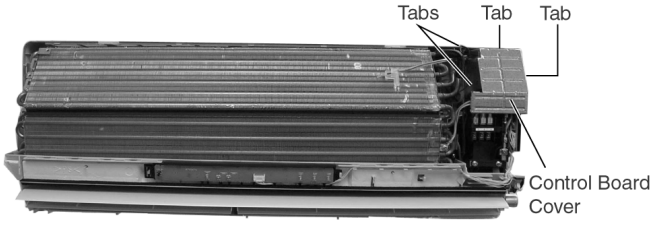


Fig. 2

2. To remove the Electronic Controller:
   - Release the Particular Piece. (Fig. 3)
   - Release the hook that hold the Electronic Controller. (Fig. 3)

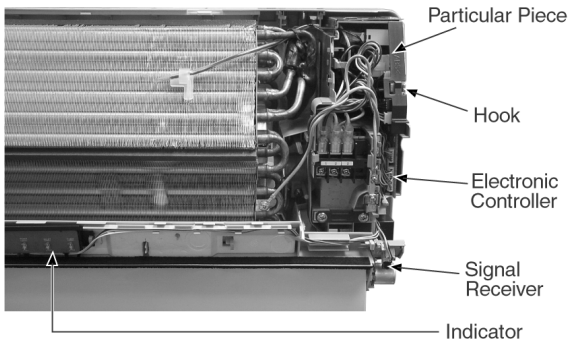


Fig. 3

12.2. Indoor Fan Motor and Cross Flow Fan Removal Procedures

- Remove the Control Board by:-
  - – Releasing CN-REC/DISP connectors. (Fig. 4)
  - – Releasing CN-FM connectors. (Fig. 4)
  - – Releasing CN-STM connector. (Fig. 4)
  - – Removing the Earth Wire screw. (Fig. 4)
  - – Releasing the Intake Air Sensor. (Fig. 4)
  - – Releasing the Piping Sensor. (Fig. 4)

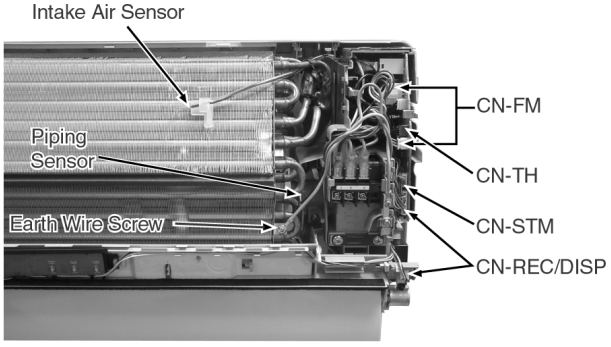


Fig. 4

– Pulling out the Drain Hose from outlet to remove the Discharge Grille. (Fig. 5)

– Removing the right and left screws. (Fig. 5)

– Then remove the Control Board by pressing down the hook at the left and pushing up the right hook. (Fig. 5)

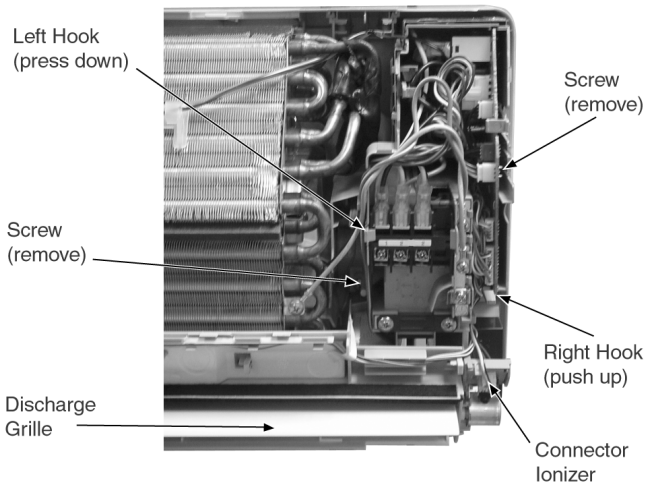


Fig. 5

– Release the Fan Motor leadwire by pressing the hook at the center of the connector. (Fig. 6)

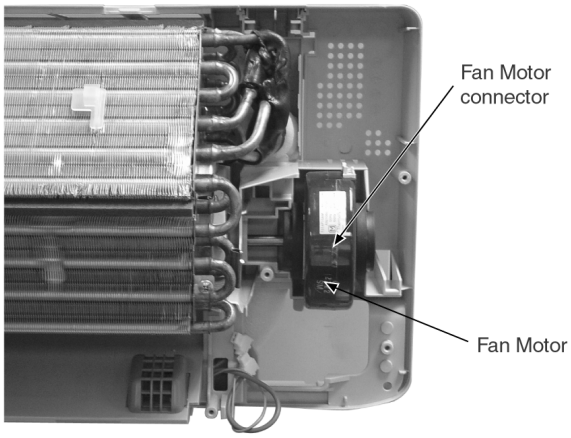


Fig. 6

– Remove the screw at the Cross Flow Fan. (Fig. 7)

– REMINDER - To reinstall the Fan Motor, adjust the connector of the Fan Motor as shown in the Fig. 7.

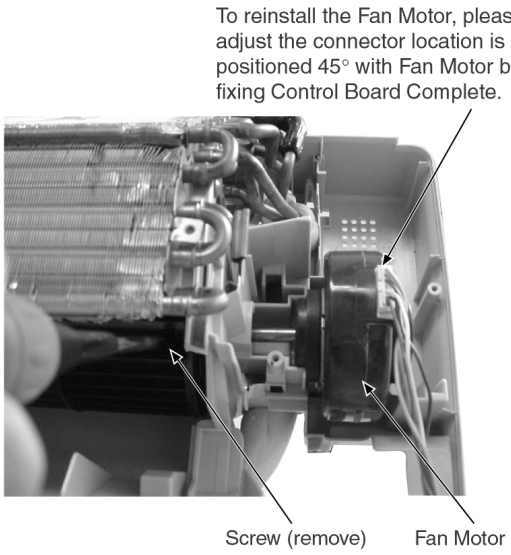

To reinstall the Fan Motor, please adjust the connector location is positioned 45° with Fan Motor before fixing Control Board Complete.
Screw (remove)
Fan Motor

Fig. 7

– Remove the screws at the left of the Evaporator. (Fig. 8)

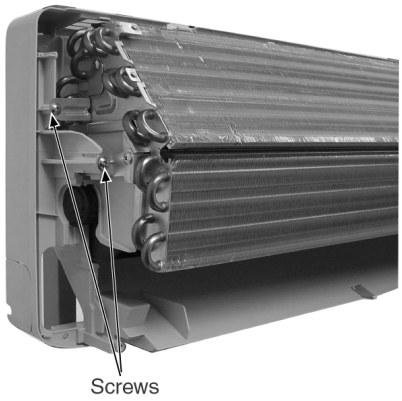


Fig. 8

– Remove the Bearing. (Fig. 9)

– Push up the Evaporator and pull out the Cross Flow Fan from shaft. By then, Fan Motor can be taken out. (Fig. 9)

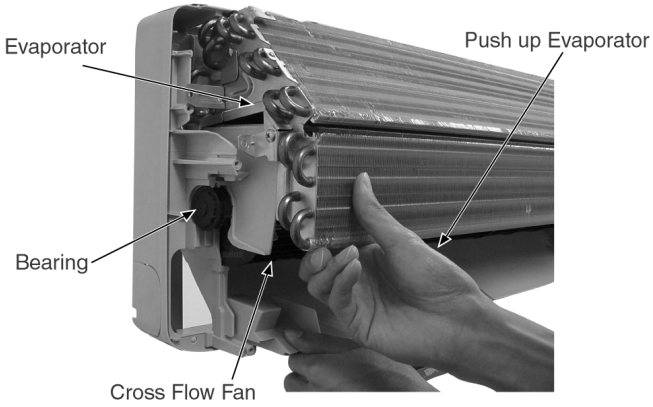


Fig. 9

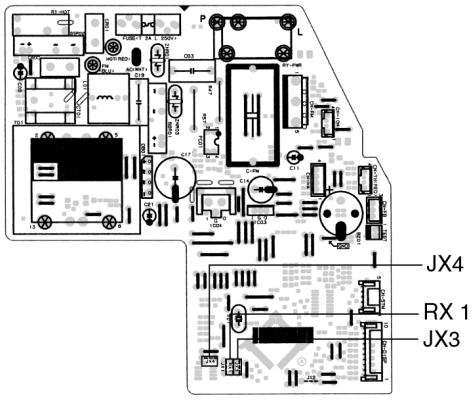
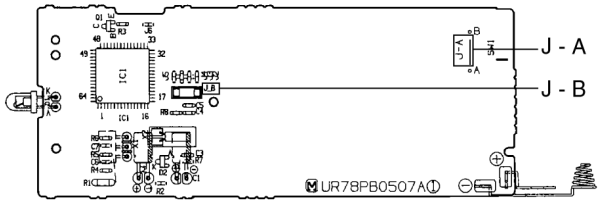
- **Remote Control Reset**

When the batteries are inserted for the first time, or the batteries are replaced, all the indications will blink and the remote control might not work.

If this happen, remove the cover of the remote control and you will find a resetting terminal, and by shorting it with a minus screwdriver, it will return to normal.

- **Changing the wireless remote control transmission code**

When two indoor units are installed in the same room, in order to prevent operating errors caused by using two remote controls, cut a jumper wire at the remote control printed circuit board (J - A) and cut a jumper wire at the indoor printed circuit board (JX4). It is possible to select from 4 types of transmission codes including one at time of delivery condition (0).

Indoor printed circuit board	Remote control printed circuit board
	

	Remote control printed circuit board		Indoor printed circuit board			Note
	J - A	J - B	JX3	JX4	RX 1	
0	SHORT	OPEN	SHORT	SHORT	——	At product delivery
1	OPEN	OPEN	SHORT	OPEN	——	
2	SHORT	SHORT	OPEN	OPEN	10 KΩ	
3	OPEN	SHORT	SHORT	OPEN	10 KΩ	

13 Troubleshooting Guide

13.1. Refrigeration cycle system

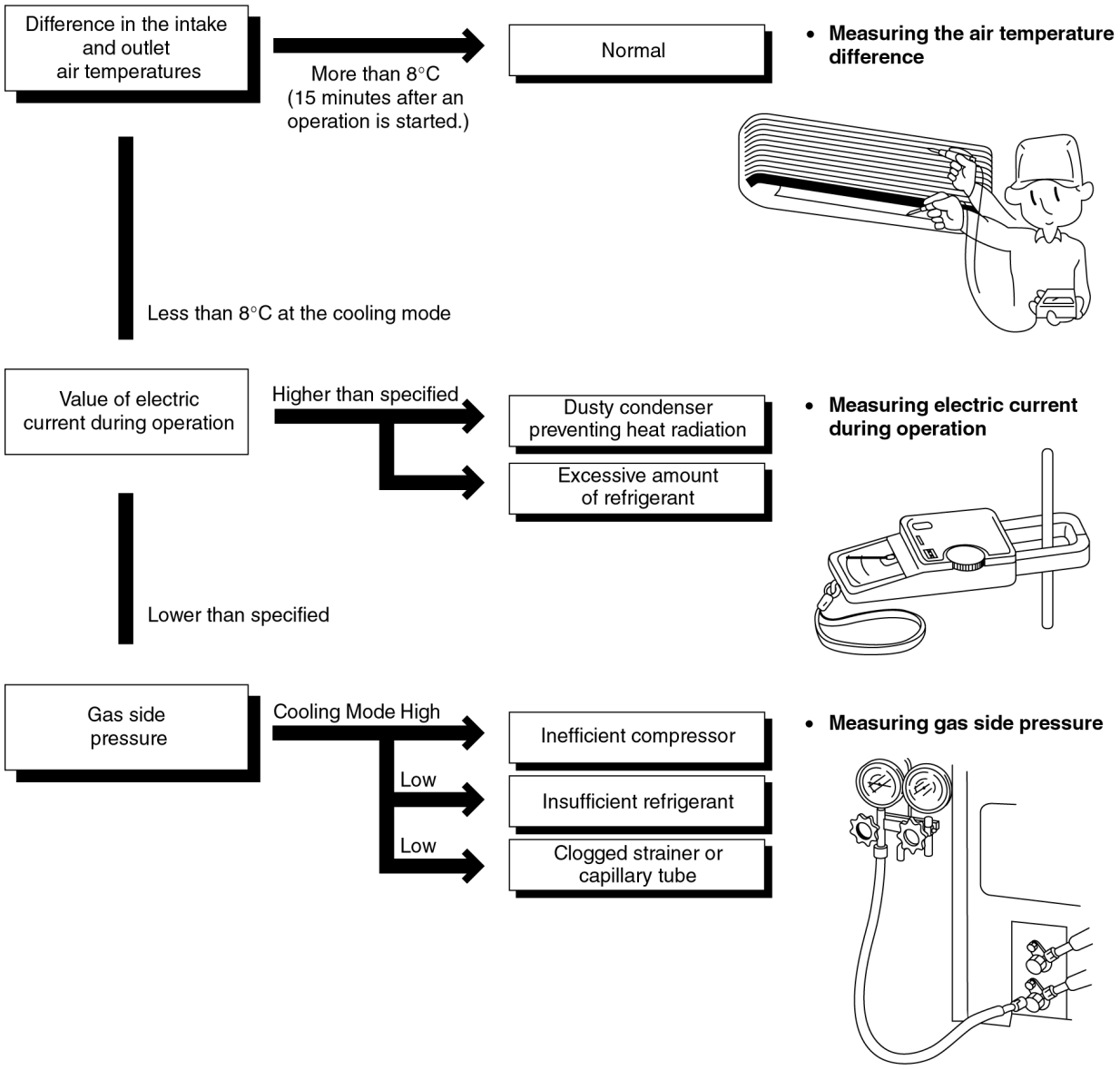
In order to diagnose malfunctions, make sure that there are no electrical problems before inspecting the refrigeration cycle. Such problems include insufficient insulation, problem with the power source, malfunction of a compressor and a fan.

The normal outlet air temperature and pressure of the refrigeration cycle depends on various conditions, the standard values for them are shown in the table to the right.

Normal Pressure and Outlet Air Temperature (Standard)

	Gas pressure Mpa (kg/cm^2G)	Outlet air temperature (°C)
Cooling Mode	0.4 ~ 0.6 (4 ~ 6)	12 ~ 16

* Condition: Indoor fan speed; High
Outdoor temperature: 35°C


Difference in the intake and outlet air temperatures
More than 8°C (15 minutes after an operation is started.)
Normal
Less than 8°C at the cooling mode
Value of electric current during operation
Higher than specified
Dusty condenser preventing heat radiation
Excessive amount of refrigerant
Lower than specified
Gas side pressure
Cooling Mode High
Low
Low
Inefficient compressor
Insufficient refrigerant
Clogged strainer or capillary tube

- **Measuring the air temperature difference**

- **Measuring electric current during operation**

- **Measuring gas side pressure**

13.1.1. Relationship between the condition of the air conditioner and pressure and electric current

Condition of the air conditioner	Cooling Mode		
	Low Pressure	High Pressure	Electric current during operation
Insufficient refrigerant (gas leakage)	↘	↘	↘
Clogged capillary tube or Strainer	↘	↘	↘
Short circuit in the indoor unit	↘	↘	↘
Heat radiation deficiency of the outdoor unit	↗	↗	↗
Inefficient compression	↗	↘	↘

• Carry out the measurements of pressure, electric current, and temperature fifteen minutes after an operation is started.

13.1.2. Diagnosis methods of a malfunction of a compressor

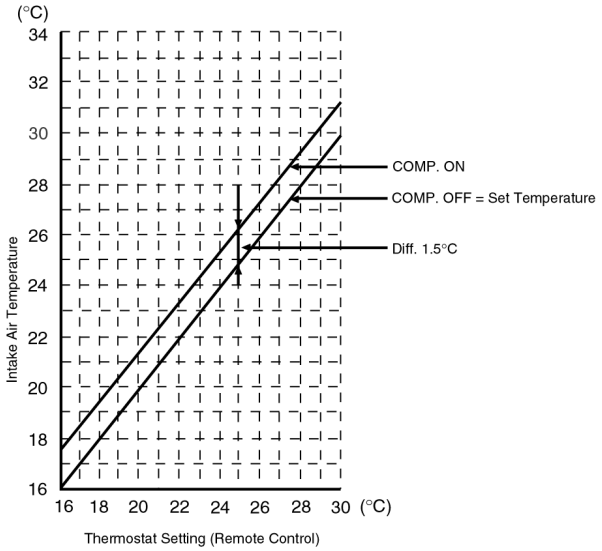
Nature of fault	Symptom
Insufficient compressing of a compressor	• Electric current during operation becomes approximately 20% lower than the normal value. • The discharge tube of the compressor becomes abnormally hot (normally 70 to 90°C). • The difference between high pressure and low pressure becomes almost zero.
Locked compressor	• Electric current reaches a high level abnormally, and the value exceeds the limit of an ammeter. In some cases, a breaker turns off. • The compressor has a humming sound.

14 Technical Data

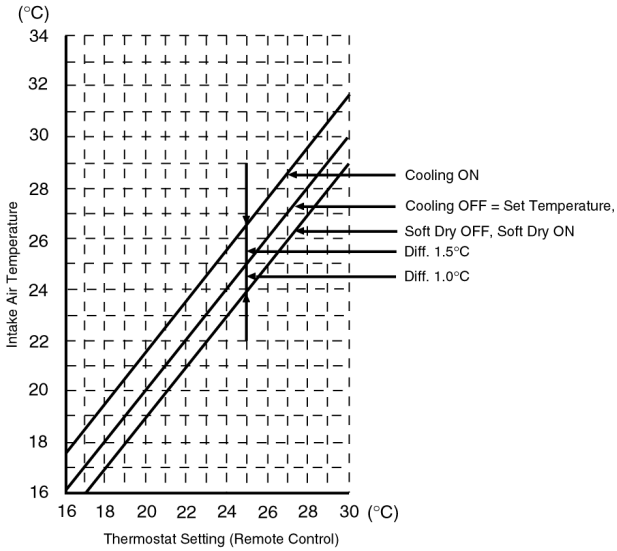
■ Thermostat characteristics

CS-C9CK / CS-C12CK

- **Cooling**



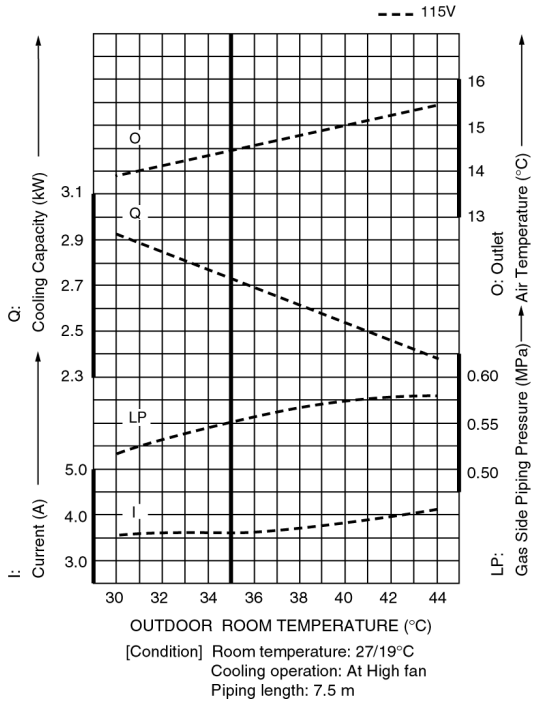
- **Soft Dry**



■ Sensible Capacity Chart

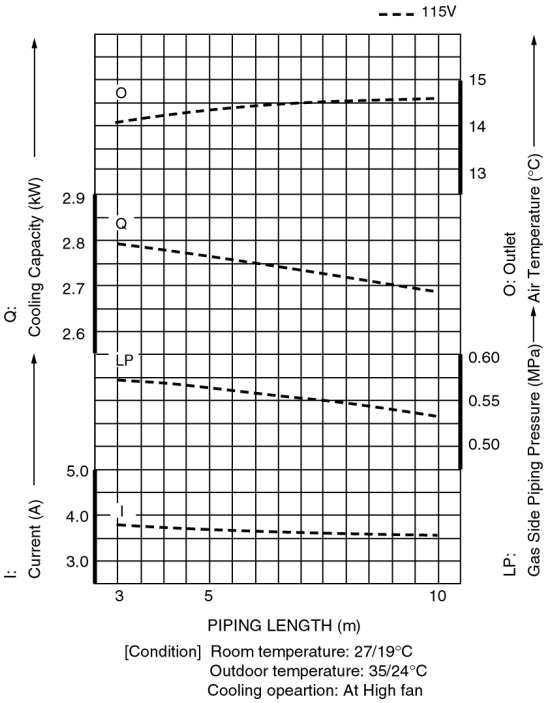
CS-C9CK / CU-C9CK

- **Cooling Characteristic**



[Condition] Room temperature: 27/19°C
Cooling operation: At High fan
Piping length: 7.5 m

- **Piping Length Characteristic**

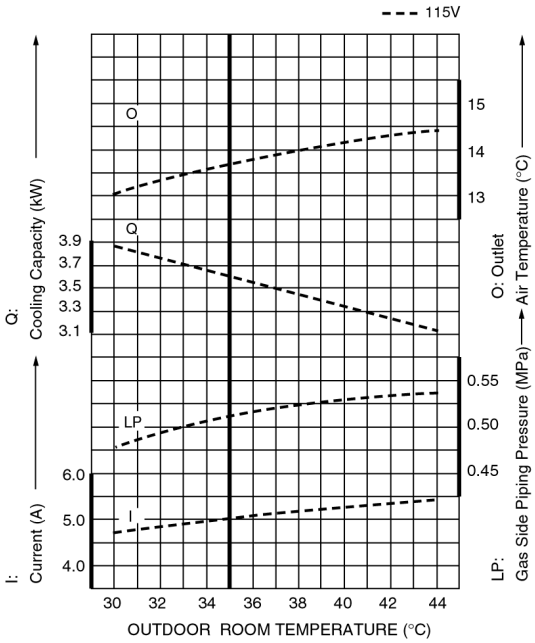


[Condition] Room temperature: 27/19°C
Outdoor temperature: 35/24°C
Cooling opeartion: At High fan

■ Operation characteristics

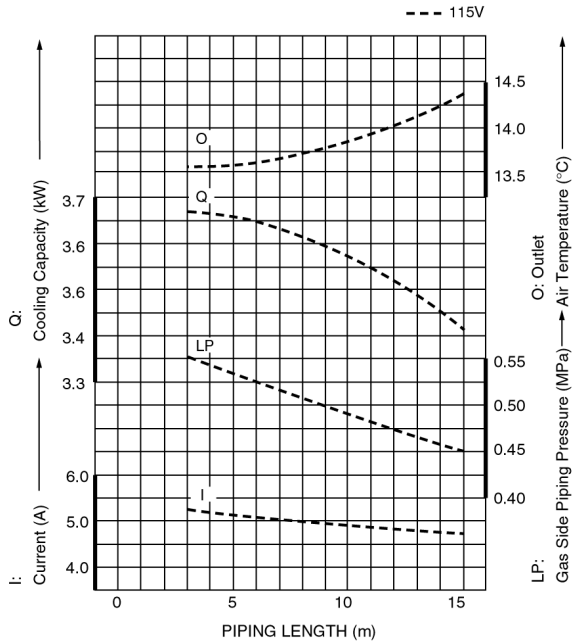
CS-C12CK / CU-C12CK

- **Cooling Characteristic**



[Condition] Room temperature: 27/19°C
Cooling operation: At High fan
Piping length: 7.5 m

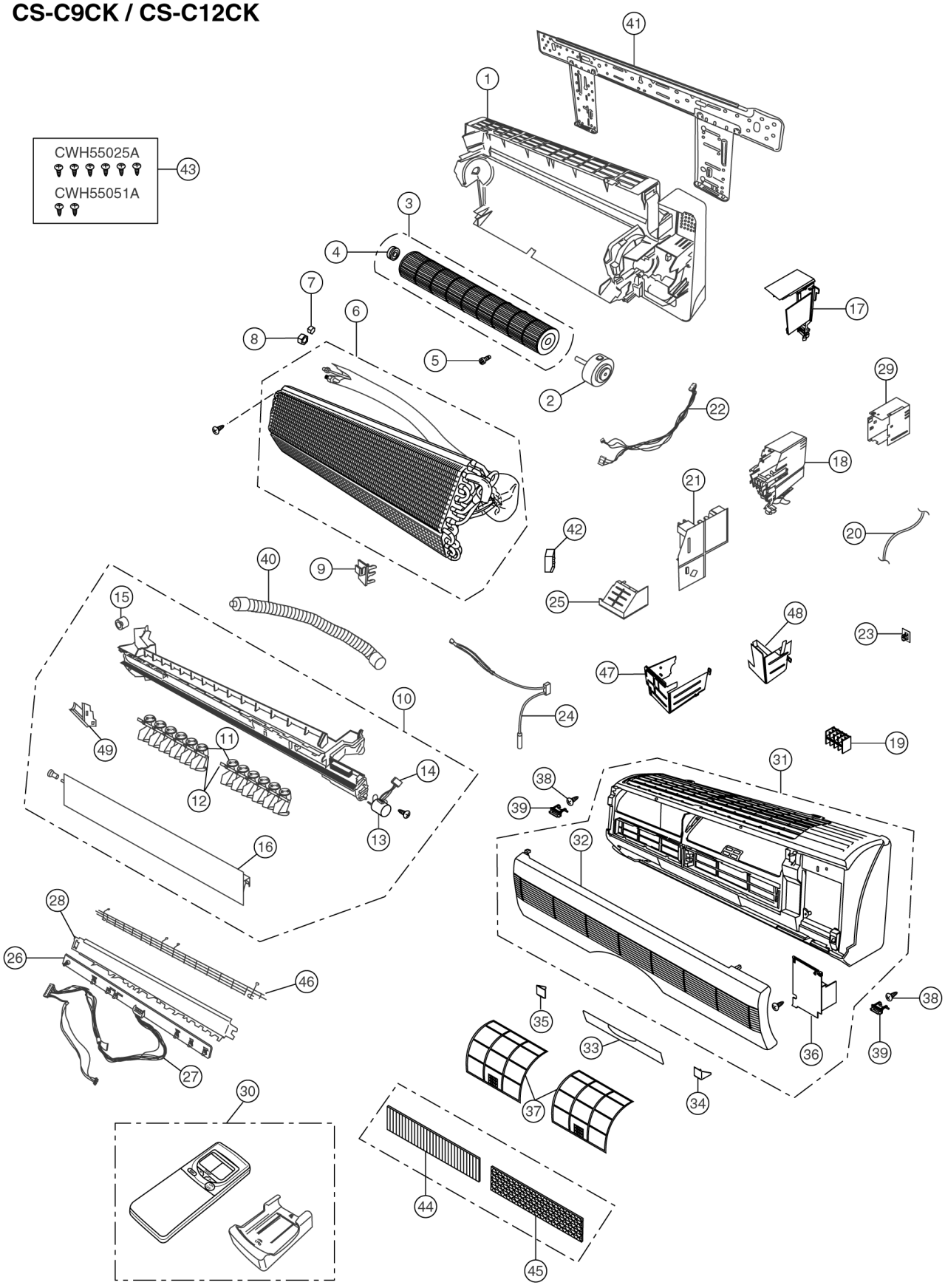
- **Piping Length Characteristic**



[Condition] Room temperature: 27/19°C
Outdoor temperature: 35/24°C
Cooling opeartion: At High fan

15 Exploded View

CS-C9CK / CS-C12CK



Note:

The above exploded view is for the purpose of parts disassembly and replacement.

The non-numbered parts are not kept as standard service parts.

16 Replacement Parts List

<Model: CS-C9CK / CS-C12CK>

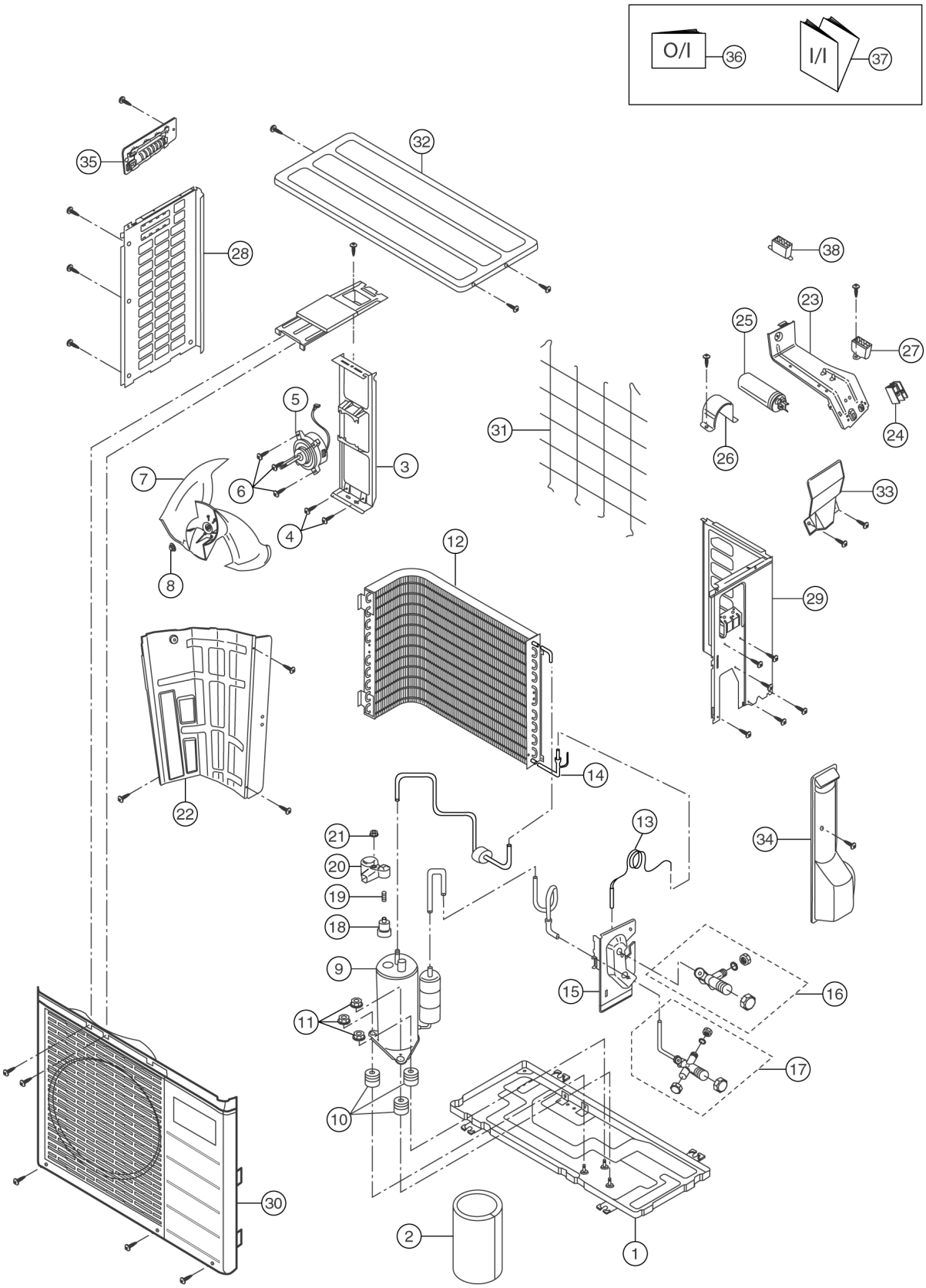
REF. NO.	PART NAME & DESCRIPTION	QTY.		CS-C9CK	CS-C12CK	REMARKS
1	CHASSY COMPLETE	1		CWD50C1257	←	
2	FAN MOTOR	1		CWA921143	←	0
3	CROSS FLOW FAN COMPLETE	1		CWH02C1012	←	
4	BEARING ASS'Y	1		CWH64K007	←	
5	SCREW - CROSS FLOW FAN	1		CWH4580304	←	
6	EVAPORATOR	1		CWB30C1261	CWB30C1245	
7	FLARE NUT	1		CWH6002140(1/4")	←	
8	FLARE NUT	1		CWT25005 (3/8")	CWT25007 (1/2")	
9	INTAKE AIR SENSOR HOLDER	1		CWH32142	←	
10	DISCHARGE GRILLE COMPLETE	1		CWE20C2166	←	
11	VERTICAL VANE	12		CWE241068	←	
12	CONNECTING BAR	2		CWE261024	←	
13	AIR SWING MOTOR	1		CWA98260	←	0
14	LEAD WIRE - AIR SWING MOTOR	1		CWA67C3977	←	
15	CAP - DRAIN TRAY	1		CWH52C1001	←	
16	HORIZONTAL VANE	1		CWE241070	←	
17	PARTICULAR PIECE	1		CWD932162	←	
18	CONTROL BOARD	1		CWH102103B	←	
19	TERMINAL BOARD COMPLETE	1		CWA28C2145	←	0
20	POWER SUPPLY CORD	1		-	-	
21	ELECTRONIC CONTROLLER - MAIN	1		CWA742985	CWA742986	0
22	LEAD WIRE - FAN MOTOR	1		CWA67C3961	←	
23	ELECTRONIC CONTROLLER - RECEIVER	1		CWA742724	←	0
24	SENSOR COMPLETE	1		CWA50C2135	←	0
25	CONTROL BOARD FRONT COVER	1		CWH131090	←	
26	ELECTRONIC CONTROLLER - INDICATOR	1		CWE39C1068	←	0
27	LEAD WIRE - INDICATOR	1		CWA67C3637	←	
28	INDICATOR HOLDER	1		CWD932163	←	
29	CONTROL BOARD TOP COVER	1		CWH131091	←	
30	REMOTE CONTROL COMPLETE	1	(1) (2)	CWA75C2297 CWA75C2299	← ←	0
31	FRONT GRILLE COMPLETE	1	(1) (2)	CWE11C2713 CWE11C2755	← ←	
32	INTAKE GRILLE	1		CWE221036A	←	
33	CONTROL PANEL	1		CWE312300	←	
34	DECORATION BASE (R)	1		CWE351067	←	
35	DECORATION BASE (L)	1		CWE351068	←	
36	GRILLE DOOR	1		CWE141047	←	
37	AIR FILTER	2	(1) (2)	CWD001047 CWD001098	← ←	
38	SCREW - FRONT GRILLE	2		XTN4+16C	←	
39	CAP - FRONT GRILLE	2		CWH521062	←	
40	DRAIN HOSE	1	(1) (2)	CWH85287 CWH851044	← ←	
41	INSTALLATION PLATE	1		CWH36K1006	←	
42	ANTI-VIBRATION BUSHING	1		-	-	
43	BAG COMPLETE - INSTALLATION SCREW	1		CWH82C067	←	
44	AIR PURIFYING FILTER	1	(1) (2)	CWD00C1088 CWMD00C0001	← ←	0
45	SOLAR DEODORIZING FILTER	1		CWMD00C0002	←	
46	WIRE NET	1		CWD041033A	←	
47	CONTROL BOARD COVER COMPLETE	1		CWH13C1053	←	
48	CONTROL BOARD COVER	1		CWH131113	←	
49	FULCRUM	1		CWH621013	←	

(Note)

- All parts are supplied from MAICO, Malaysia (Vendor Code: 061).
- "O" marked parts are recommended to be kept in stock.
- (1) — CS-C9CKPG-4, CS-C12CKPG-4 (USA).
- (2) — CS-C9CKPG-5, CS-C12CKPG-5 (Canada).

17 Exploded View

CU-C9CK / CU-C12CK



Note:

The above exploded view is for the purpose of parts disassembly and replacement.

The non-numbered parts are not kept as standard service parts.

18 Replacement Parts List

<Model: CU-C9CK / CU-C12CK>

REF. NO.	PART NAME & DESCRIPTION	QTY.		CU-C9CK	CU-C12CK	REMARKS
1	CHASSY ASS'Y	1		CWD50K2055A	←	
2	SOUND PROOF MATERIAL	1	(1) (2)	CWG302125 CWG302125	CWG302154 ←	
3	FAN MOTOR BRACKET	1		CWD541030	←	
4	SCREW - FAN MOTOR BRACKET	2		CWH55413	←	
5	FAN MOTOR	1		CWA951235	←	0
6	SCREW - FAN MOTOR MOUNT	3		CWH55406	←	
7	PROPELLER FAN ASS'Y	1		CWH03K1006	←	
8	NUT - PROPELLER FAN	1		CWH56053	←	
9	COMPRESSOR	1		2R13S126A6J	2P19S126C1A	0
10	ANTI - VIBRATION BUSHING	3		CWH50077	←	
11	NUT - COMPRESSOR MOUNT	3		CWH56000	←	
12	CONDENSER	1		CWB32C1291	CWB32C1267	
13	TUBE ASS'Y (CAPILLARY TUBE)	1		CWB15K1070	CWB15K1096	
14	STRAINER	1		CWB11025	CWB11004	
15	HOLDER COUPLING ASS'Y	1		CWH351015A	←	
16	2-WAY VALVE (LIQUID)	1		CWB021081	←	0
17	3-WAY VALVE (GAS)	1		CWB011104	CWB011105	0
18	OVERLOAD PROTECTOR	1		CWA121113	CWA121114	0
19	HOLDER - O.L.P.	1		CWH7041200	←	
20	TERMINAL COVER	1		CWH171011	←	
21	NUT - TERMINAL COVER	1		CWH7080300	←	
22	SOUND PROOF BOARD	1		CWH151022A	CWH151023A	
23	CONTROL BOARD	1		CWH102186	←	
24	TERMINAL BOARD ASS'Y	1		CWA28C383	←	
25	CAPACITOR - COMPRESSOR	1		CWA312064 (35µF, 370VAC)	XS371506FP-B (50µF, 370VAC)	0
26	HOLDER CAPACITOR	1		CWH30057	←	
27	CAPACITOR - FAN MOTOR	1		CWA31270 (8.0µF, 230VAC)	←	0
28	CABINET SIDE PLATE (L)	1		CWE041044A	←	
29	CABINET SIDE PLATE (R)	1		CWE041043A	CWE041073A	
30	CABINET FRONT PLATE	1		CWE06K1036	←	
31	WIRE NET	1		CWD041028A	CWD041037A	
32	CABINET TOP PLATE	1		CWE031018A	←	
33	PLATE - C. B. COVER	1		CWH131088	←	
34	CONTROL BOARD COVER	1		CWH131092	←	
35	HANDLE	1		CWE161010	←	
36	OPERATION INSTRUCTIONS	1	(1) (2)	CWF563841 CWF563842	← ←	
37	INSTALLATION INSTRUCTIONS	1		CWF612332	←	
38	MAGNET RELAYS	1		K6A1ALA00001	←	

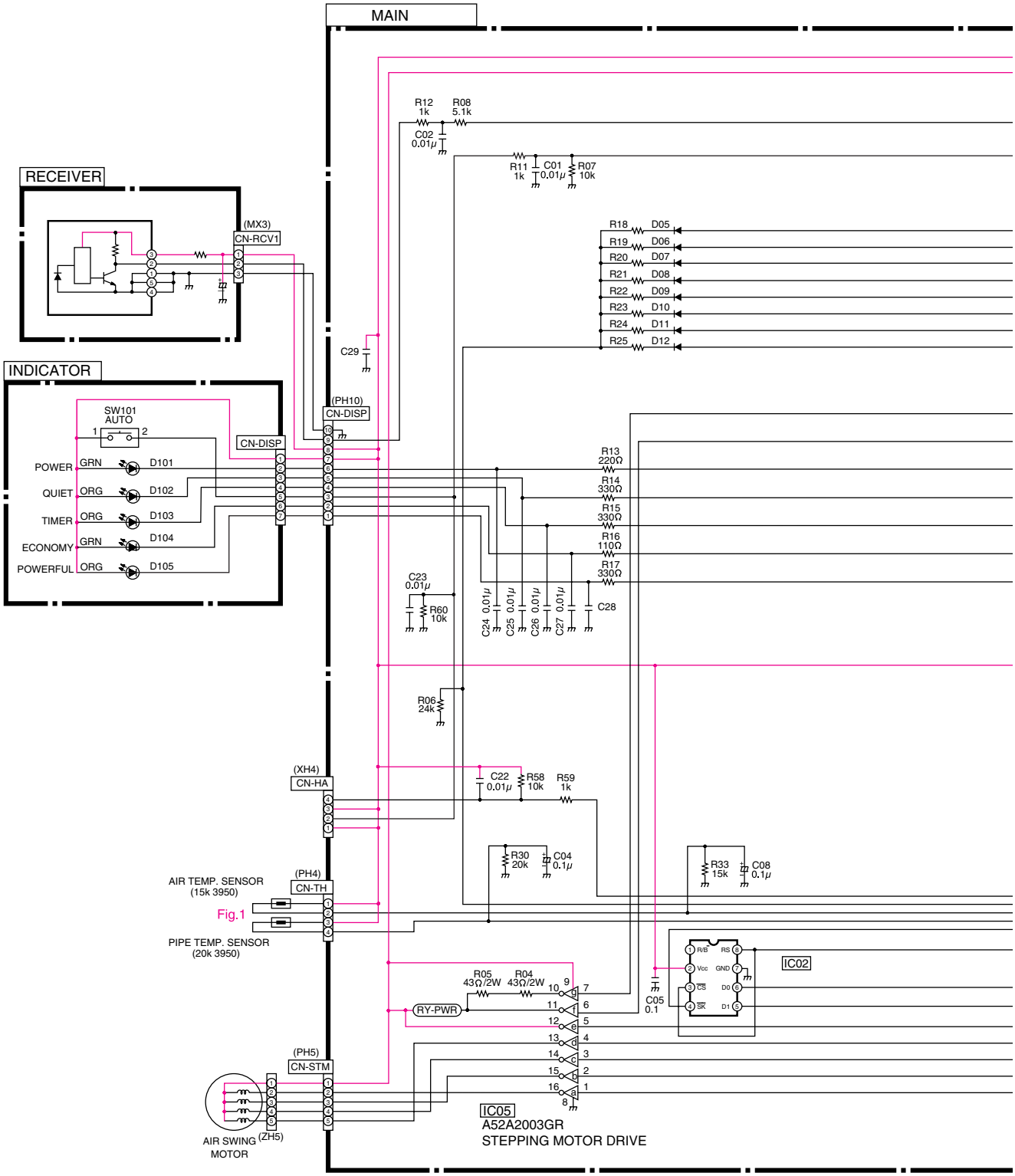
(Note)

- All parts are supplied from MAICO, Malaysia (Vendor Code: 061).
- "O" marked parts are recommended to be kept in stock.
- (1) — CU-C9CKP6G-4, CU-C12CKP6G-4 (USA).
- (2) — CU-C9CKP6G-5, CU-C12CKP6G-5 (Canada).

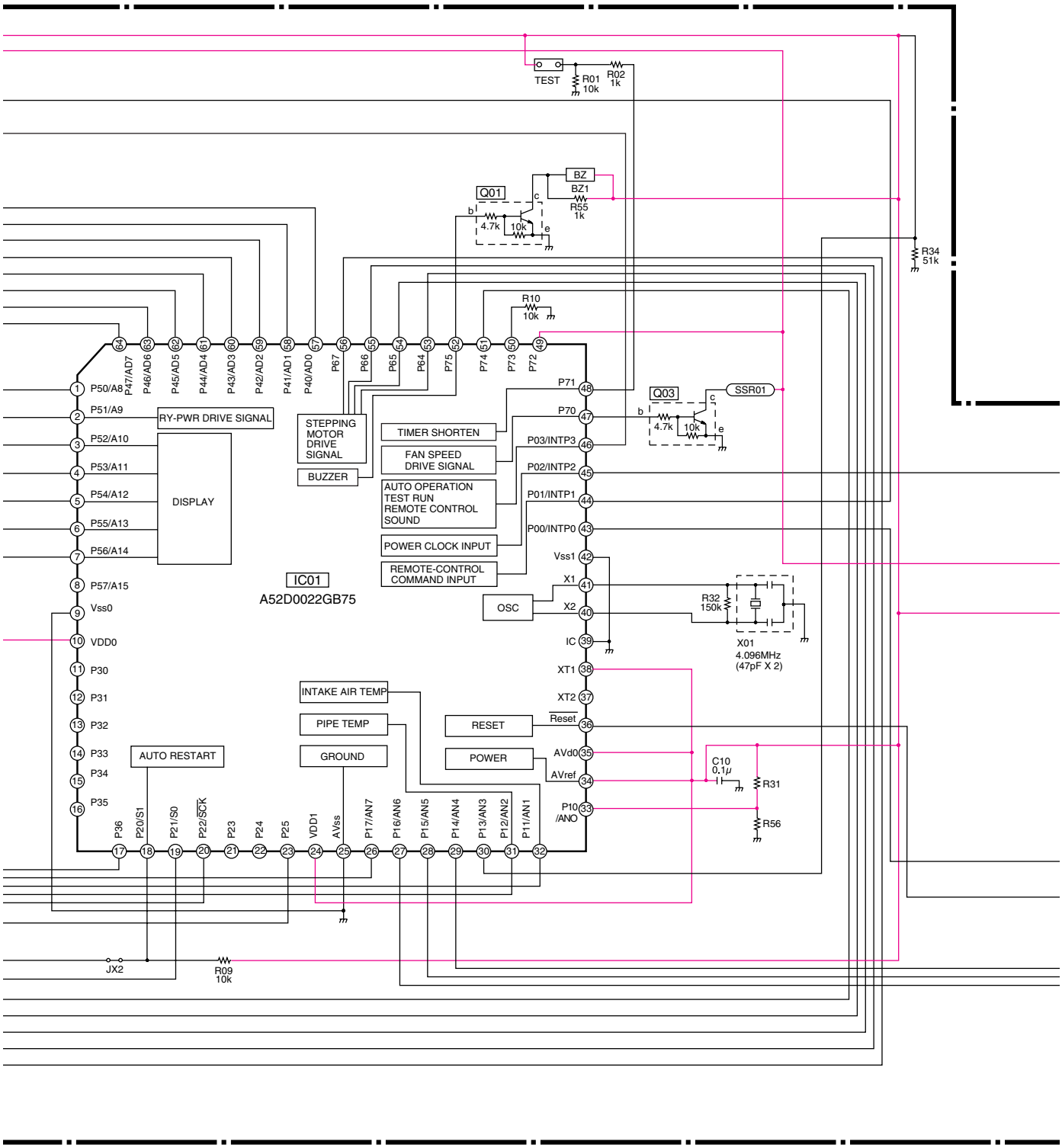
19 Electronic Circuit Diagram

- **CS-C9CK / CU-C9CK**
- **CS-C12CK / CU-C12CK**

SCHEMATIC DIAGRAM 1/3



SCHEMATIC DIAGRAM 2/3



SCHEMATIC DIAGRAM 3/3

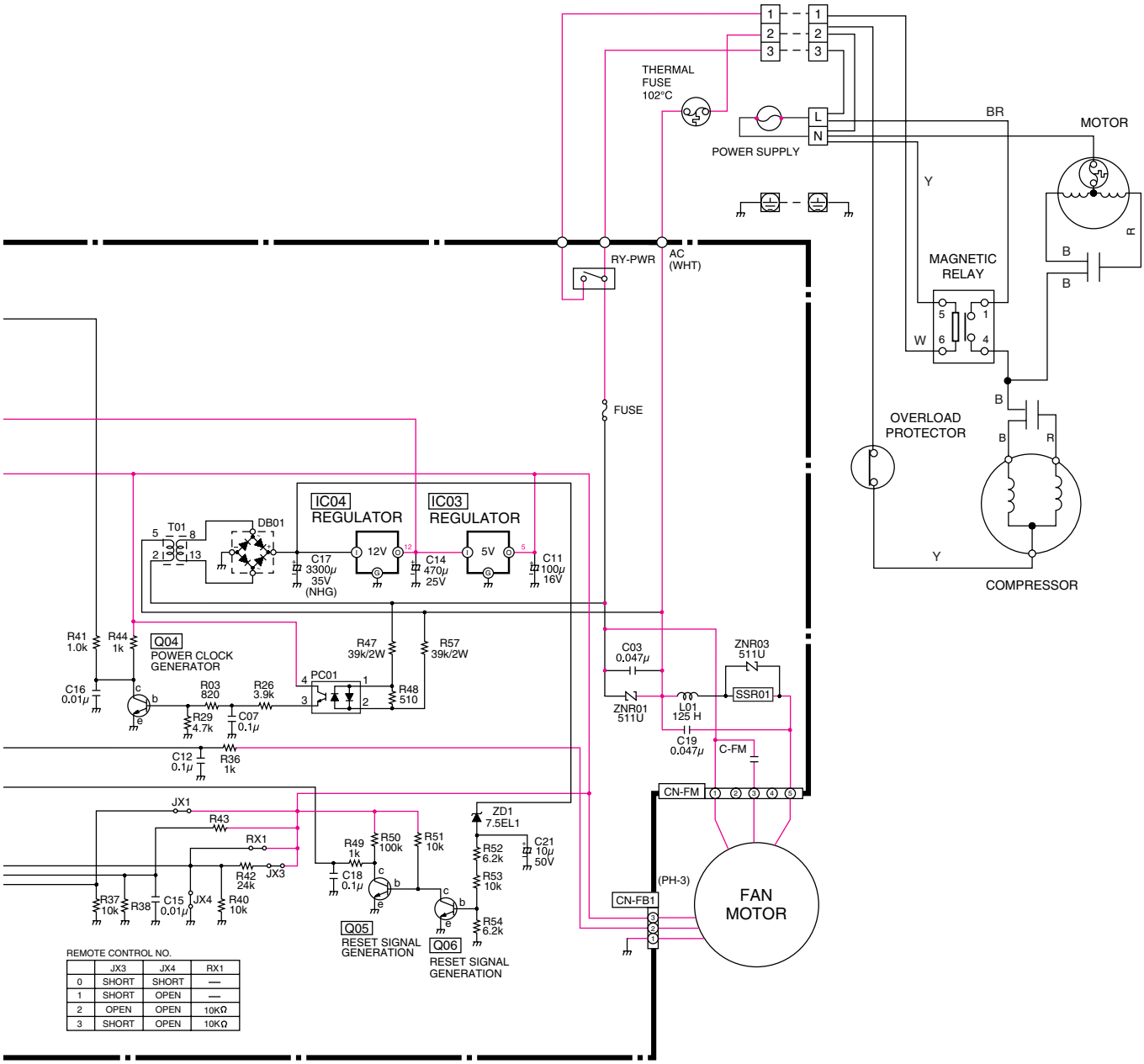


Fig. 1

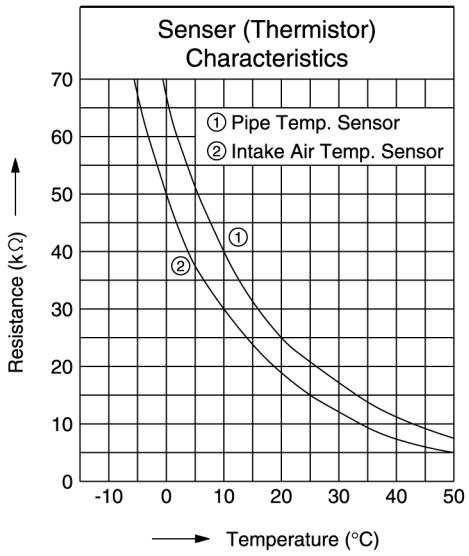


Fig. 2

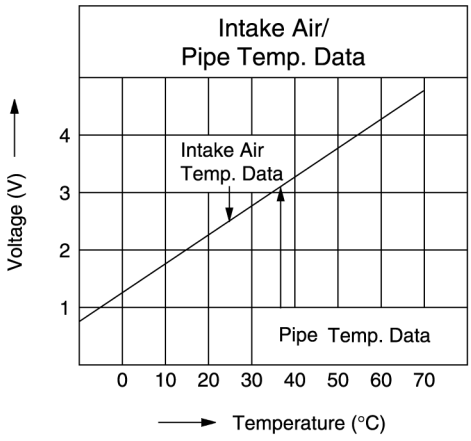
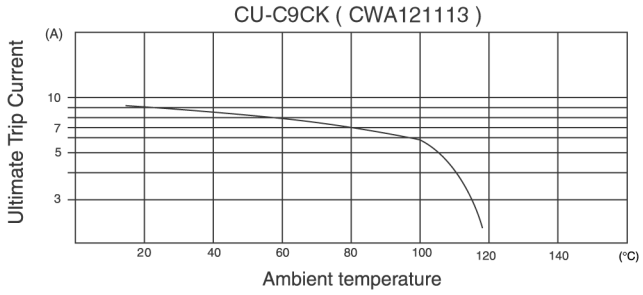
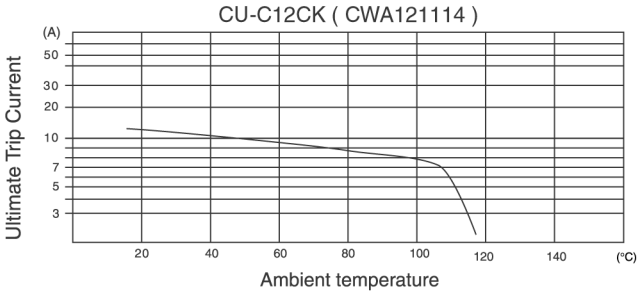


Fig. 3 OLP Characteristics (Compressor)





How to use electronic circuit diagram

Before using the circuit diagram, read the following carefully.

* Voltage measurement
  Voltage has been measured with a digital tester when the indoor fan is set at high fan speed under the following conditions without setting the timer.
  Use them for servicing.
  Voltage indication is in Red at all operations.

	Intake air temperature	Temperature setting	Discharge air temperature	Pipe temperature
Cooling	27°C	16°C	17°C	15°C

* Indications for resistance
  a. K....kΩ M....MΩ
  W...watt Not indicated....1/4W
  b. Type
  Not indicated.....carbon resister
  Tolerance±5%
  .....metal oxide resister
  Tolerance±1%

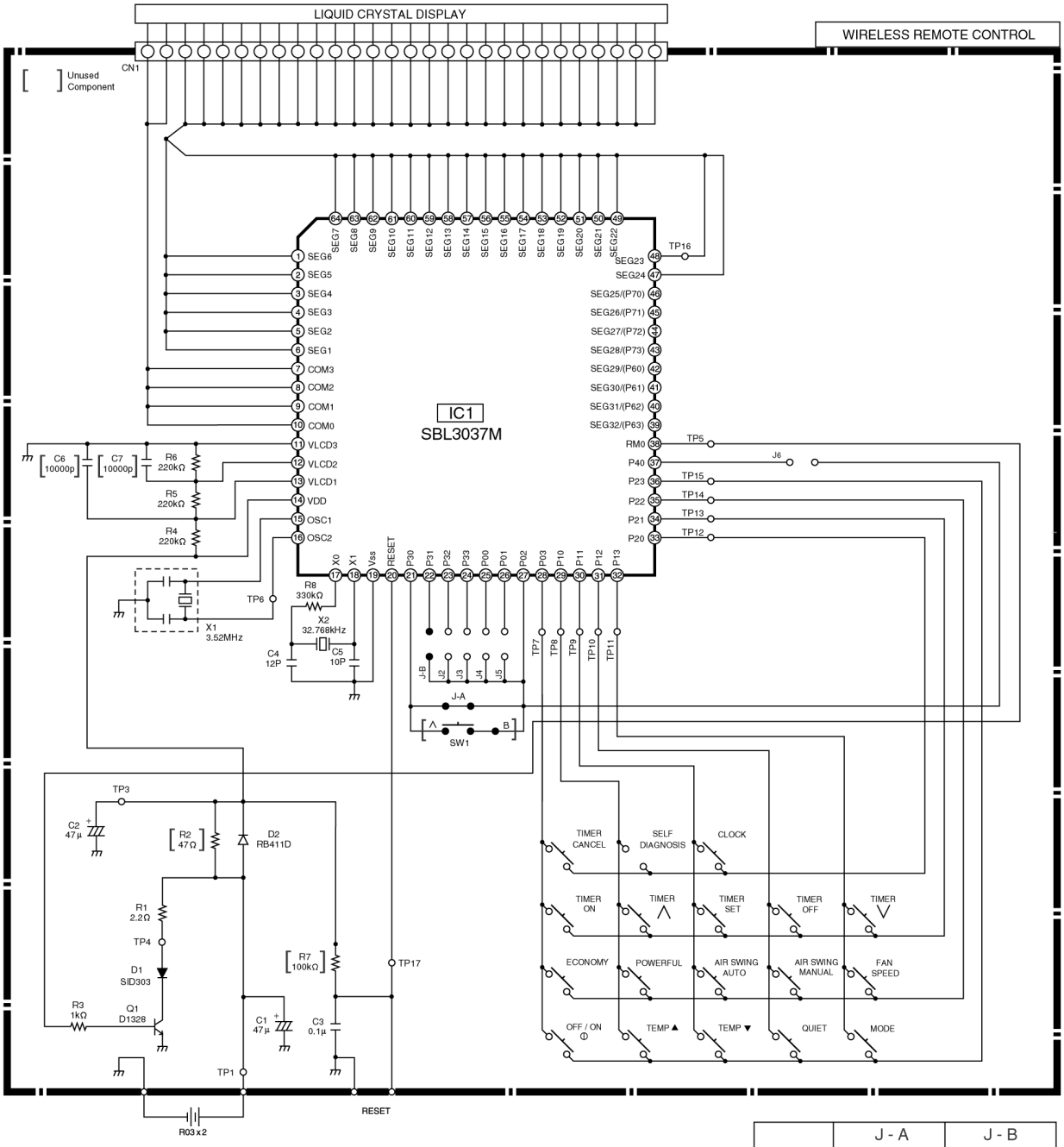
* Indications for capacitor
  a. Unit μ....μF P....pF
  b. Type Not indicated....ceramic capacitor
  (S).....S series aluminium electrolytic capacitor
  (Z).....Z series aluminium electrolytic capacitor
  (SU).....SU series aluminium electrolytic capacitor
  (P).....P series polyester system
  (SXE).....SXE series aluminium electrolytic capacitor
  (SRA).....SRA series aluminium electrolytic capacitor
  (KME).....KME series aluminium electrolytic capacitor

* Diode without indication.....MA165
※ Circuit Diagram is subject to change without notice for further development.

TIMER TABLE

Name		Time	Test Mode (When test point Short-circuited)	Remarks
Real Timer		1 hr.	1 min.	
		10 min.	10 sec.	
		1 min.	1 sec.	
Time Delay Safety Control		2 min. 58 sec.	0 sec.	
Forced Operation		60 sec.	0 sec.	
Time Save Control		7 min.	4.2 sec.	
Anti-Freezing		4 min.	0 sec.	
Auto Mode Judgement		20 sec.	0 sec.	
Soft Dry	OFF	6 min.	36 sec.	
	ON	10 min.	60 sec.	Soft Dry: 10 min. operation
Deodorizing Control	Cooling	40 sec.	4 sec.	
		70 sec.	7 sec.	
		20 sec.	2 sec.	
		180 sec.	18 sec.	
	Soft Dry	40 sec.	4 sec.	
		360 sec.	36 sec.	
Comp. Reverse Rotation Detection		5 min.	30 sec.	Comp. ON 5 min. and above
		2 min	0 sec.	
Comp./ Fan Motor Delay Timer		1.6 sec.	0 sec.	
Powerful Mode Operation		15 min.	15 sec	
Random Auto Restart Control		0 ~ 62 sec.	0 ~ 6.2 sec.	

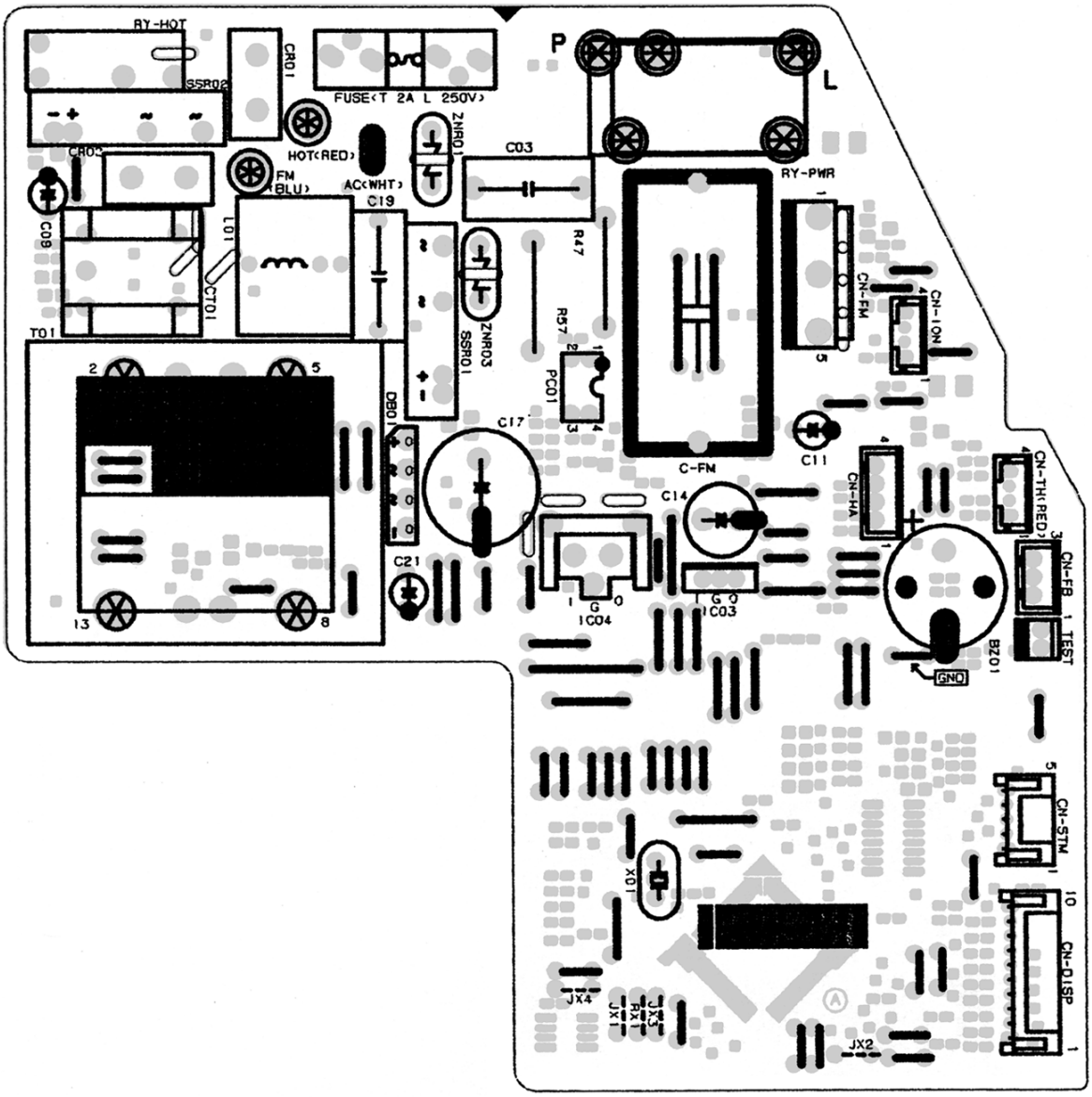
19.1. REMOTE CONTROL



	J - A	J - B
0	SHORT	OPEN
1	OPEN	OPEN
2	SHORT	SHORT
3	OPEN	SHORT

19.2. PRINT PATTERN
INDOOR UNIT PRINTED CIRCUIT BOARD

TOP VIEW



19.3. PRINT PATTERN
INDOOR UNIT PRINTED CIRCUIT BOARD

BOTTOM VIEW